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March 31, 2014

Mr. Steven Way
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1595 Wynkoop Street
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RE: St. Louis Tunnel Discharge Source Mine Water Treatability Study Completion Report
Rico-Argentine Mine Site – Rico Tunnels, Operable Unit OU01
Dolores County, Colorado

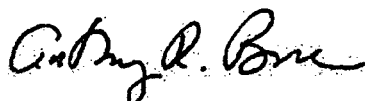
Dear Mr. Way:

On behalf of Atlantic Richfield Company (Atlantic Richfield), please find enclosed the *St. Louis Tunnel Discharge Source Mine Water Treatability Study Completion Report* (report) prepared for the Rico-Argentine Mine Site (site). The work described in this report was performed pursuant to the requirements in Task E – Source Water Investigation and Controls / Subtask E2 – Additional Investigations accompanying the Unilateral Administrative Order for Removal Action, Rico-Argentine Site, Dolores County, United States Environmental Protection Agency, Region 8, (U.S. EPA), dated March 9, 2011 (Docket No. CERCLA-08-2011-0005).

This report describes the activities and results of the St. Louis Tunnel Discharge Source Mine Water treatability study (treatability study) that was conducted at the site during the 2012 and 2013 field seasons. The treatability study was designed to evaluate the in-situ treatability of water within the underground mine workings by injection of alkaline solutions into the 517 Shaft. Tracer tests were also used to investigate the hydraulic characteristics of the mine workings between the 517 Shaft and the St. Louis Tunnel discharge.

If you have any questions regarding this report, please feel free to contact me at (714) 228-6770 or via e-mail at Anthony.Brown@bp.com.

Sincerely,



Tony Brown
Project Manager Mining
Atlantic Richfield Company

Enclosure: *St. Louis Tunnel Discharge Source Mine Water Treatability Study Completion Report*



Mr. Steven Way
U.S. EPA Region 8
March 31, 2014
Page 2 of 2

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**ST. LOUIS TUNNEL DISCHARGE SOURCE MINE WATER
TREATABILITY STUDY COMPLETION REPORT**

Rico-Argentine Mine Site – Rico Tunnels

Operable Unit OU01

Dolores County, Colorado

Prepared for:

**Atlantic Richfield Company
La Palma, California**

Prepared by:

**AMEC Environment & Infrastructure, Inc.
Rancho Cordova, California**

March 2014

Project No. SA11161340.5

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ABBREVIATIONS AND ACRONYMS

%	percent
AECI	Anderson Engineering Company Inc
AMEC	AMEC Environment & Infrastructure, Inc.
Anaconda	Anaconda Copper Mining Company
Atlantic Richfield	Atlantic Richfield Company
AVV	air vacuum valve
C	concentration
CaCO ₃	calcium carbonate
CDRMS	Colorado Division of Reclamation, Mining and Safety
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
cfs	cubic feet per second
CO ₂	carbon dioxide
Colog	Layne Christensen Company – Colog Division
d ²	day squared
DO	dissolved oxygen
DR-3	St. Louis Tunnel discharge flow rate monitoring location
DR-3A	St. Louis Tunnel discharge sampling location
eq/min	equivalents per minute
ft ³	cubic foot, cubic feet
g/L	grams per liter
gpm	gallons per minute
HRT	hydraulic residence time
K ₂ CO ₃	potassium carbonate
kW	kilowatt
lbs	pounds
lbs/d	pounds per day
LiCl	lithium chloride
mg/L	milligram per liter
mL/min	milliliters per minute
mV	millivolts
Na ₂ CO ₃	soda ash or sodium carbonate
NaBr	sodium bromide
NaOH	sodium hydroxide
NE	northeast
NW	northwest
ORP	oxidation reduction potential
Pace	Pace Analytical Laboratory, Lenexa, Kansas
PVC	polyvinyl chloride
Q	flow rate
RAWP	Removal Action Work Plan
Report	St. Louis Tunnel Discharge Source Mine Water Treatability Study Completion Report
RTD	residence time distribution
s.u.	standard units
SAP	Sampling and Analysis Plan
SE	southeast

ABBREVIATIONS AND ACRONYMS (CONTINUED)

site	Rico-Argentine Mine Site – Rico Tunnels, Operable Unit OU01, Dolores County, Colorado
SOP	standard operating procedure
TDS	total dissolved solids
U.S. EPA	United States Environmental Protection Agency
UAO	Unilateral Administrative Order
VFD	variable frequency drive
Work Plan	St. Louis Tunnel Discharge Source Mine Water Treatability Study Work Plan
Work Plan Addendum	St. Louis Tunnel Discharge Source Mine Water Treatability Study Work Plan Addendum
µg/L	micrograms per liter
σ ²	variance

EXECUTIVE SUMMARY

AMEC Environment & Infrastructure, Inc. (AMEC), on behalf of Atlantic Richfield Company (Atlantic Richfield), has prepared this *St. Louis Tunnel Discharge Source Mine Water Treatability Study Completion Report* (Report) to document the activities and results of the St. Louis Tunnel Discharge Source Mine Water treatability study (treatability study). As described in the treatability study work plan (Atlantic Richfield, 2012) and its amendment (Atlantic Richfield, 2013), the treatability study was designed to evaluate the feasibility and effectiveness of in-situ treatment of mine water at the Rico-Argentine Mine Site in Dolores County, Colorado (site) by injection of alkaline solutions into the 517 Shaft. The objective was to increase the pH and alkalinity of mine water in underground workings, thereby precipitating metals and decreasing metals loading in the St. Louis Tunnel discharge. The treatability study was conducted during the 2012 and 2013 field seasons.

The 2012 injection test was conducted over 42 days between September and November, 2012. About 22,700 gallons of potassium carbonate (K_2CO_3) solution with an average concentration of about 25 percent (%) K_2CO_3 by weight and 330 gallons of 25% sodium hydroxide (NaOH) solution were injected into the 517 Shaft to precipitate metals, and about 626,800 gallons of water from Silver Creek were also injected as carrier water to promote mixing and flow out of the 517 Shaft and through the mine workings. Follow-on injection testing was conducted during June and July, 2013, to further evaluate in-situ chemical injection. Approximately 4,180 gallons of 25% NaOH solution and 395,000 gallons of Silver Creek water were injected into the 517 Shaft over 18 days. NaOH was used in an attempt to provide sufficient alkalinity for mine water treatment, while preventing losses of alkalinity via precipitation with calcium and magnesium. During both tests, water quality parameters were continuously monitored and water samples were collected periodically from the 517 Shaft and at the St. Louis Tunnel portal area at monitoring location DR-3A.

Injection of alkaline solutions during the 2012 and 2013 injection tests increased total alkalinity, increased pH, and reduced the concentrations of target metals (zinc, cadmium, and manganese) in the 517 Shaft. Total concentrations of target metals decreased by up to 96% in samples collected from the 517 Shaft. Total concentrations of target metals in the water discharging from the St. Louis Tunnel were reduced by up to 40% during the 2012 injection of K_2CO_3 and by as much as 26% during the 2013 injection of NaOH, despite minimal pH increases at DR-3A during both tests. During the 2012 injection of K_2CO_3 , sufficient excess alkalinity was provided to decrease the concentrations of metals in the 517 Shaft and at the St. Louis Tunnel discharge. However, the additional injection of NaOH during 2012 provided

no additional increases in alkalinity or pH and did not further decrease metals concentrations at DR-3A. Most of the contaminant load from the Southeast Cross-cut was treated during both injection tests, and some of the contaminant load from the Northwest Cross-cut may have been treated during the 2012 test due to higher and longer duration inputs of alkalinity. Tracer tests in 2012 and 2013 confirmed that the 517 Shaft and the St. Louis Tunnel discharge are hydraulically connected.

Much of the alkalinity injected into the 517 Shaft had limited short term effect during the injection tests due to precipitation of non-target metals (e.g., calcium precipitation as CaCO_3); neutralization within the mine workings; inadequate mixing in the 517 Shaft mine water pool; and sinking of the dense injection solutions in the 517 Shaft water column. Due to elongation of the injection hose, solutions were injected at least 30 feet lower in the 517 Shaft water column than intended, which resulted in reduced transport of alkalinity out of the shaft for treatment of mine water in other parts of the mine workings.

Although in-situ chemical injection did decrease the concentrations of metals discharging from the St. Louis Tunnel, no further testing of in-situ chemical treatment is recommended at this time. The results of this work will be considered in the technology screening analysis required under the RAWP. If other water treatment alternatives that currently are being evaluated for the site do not provide sufficient treatment for the St. Louis Tunnel discharge, in-situ chemical precipitation could be revisited and developed further.

ST. LOUIS TUNNEL DISCHARGE SOURCE MINE WATER TREATABILITY STUDY COMPLETION REPORT

**Rico-Argentine Mine Site – Rico Tunnels
Operable Unit OU01
Dolores County, Colorado**

1.0 INTRODUCTION

AMEC Environment & Infrastructure, Inc. (AMEC), on behalf of Atlantic Richfield Company (Atlantic Richfield), has prepared this *St. Louis Tunnel Discharge Source Mine Water Treatability Study Completion Report* (Report) to describe the activities and results of the St. Louis Tunnel Discharge Source Mine Water treatability study (treatability study). This Report was developed pursuant to Task E Subtask E2, Additional Investigations, of the *Removal Action Work Plan* (RAWP) attached to the *Unilateral Administrative Order* issued to Atlantic Richfield by the United States Environmental Protection Agency (U.S. EPA) on March 9, 2011 (Docket No. 08-2011-0005; U.S. EPA, 2011) for the Rico-Argentine Mine Site – Rico Tunnels, Operable Unit OU01, Dolores County, Colorado (site; Figures 1-1 and 1-2). The results of this work will be considered in the technology screening report that is required under the RAWP Task F, Water Treatment System Analysis and Design.

This Report describes treatability study activities that were conducted at the site during the 2012 and 2013 field seasons to evaluate the treatability of water within the underground workings at the site. As described in the *St. Louis Tunnel Discharge Source Mine Water Treatability Study Work Plan* (Work Plan; Atlantic Richfield, 2012) and its addendum (Work Plan Addendum; Atlantic Richfield, 2013), this treatability study evaluated in-situ treatment of mine water by injecting alkaline solutions into the 517 Shaft (Figure 1-3). The objectives of the injections were to increase pH, increase alkalinity, and decrease the concentrations of metals in the mine water discharging from St. Louis Tunnel. The initial injection test was conducted in 2012 (2012 injection test), and a follow-on injection test was conducted in 2013 (2013 injection test). During both tests, geochemical changes were monitored in the 517 Shaft and at the St. Louis Tunnel discharge location.

All tasks described herein were performed in accordance with the Task Specific Health and Safety Plans prepared by Atlantic Richfield's contractors. Risk assessments, Standard Operating Procedures (SOPs), and all required permits were completed or obtained prior to initiating the work.

1.1 TREATABILITY STUDY OBJECTIVES

The primary objective of the treatability study was to evaluate the impacts of alkaline injection at the 517 Shaft on metals loading in the discharge from the St. Louis Tunnel. Injection of alkaline solutions to the 517 Shaft was expected to provide in-situ treatment of source water in the 517 Shaft and the Southeast (SE) Cross-cut, thereby reducing the rate of metals discharging from the St. Louis Tunnel. Additionally, the test was designed to investigate the potential for treatment of mine water from the Northwest (NW) Cross-cut by increasing the alkalinity doses injected to the 517 Shaft. (An overview of the mine workings is included in Section 2.2.) Alkaline solution injection was expected to increase pH and alkalinity, thereby decreasing metals concentrations in the mine workings. The treatability study had the following specific objectives:

- Determine changes in metals concentrations and other water quality parameters at the St. Louis Tunnel discharge in response to injection of an alkaline solution at the 517 Shaft;
- Determine the effects of different alkaline dosing rates at the 517 Shaft on pH, alkalinity, and metals concentrations in the St. Louis Tunnel discharge;
- Evaluate the residence time distribution (RTD) of water flowing between the 517 Shaft and the St. Louis Tunnel discharge using a short-term injection of a conservative tracer; and
- Estimate the total mine water flows from other areas of the mine workings by continuous injection of a conservative tracer.

The results of the 2012 injection test indicated that injection of alkaline solutions into the 517 Shaft can reduce metals concentrations at the St. Louis Tunnel discharge. The 2013 injection test was completed as a follow-on to the 2012 injection test to evaluate in-situ treatment at higher pH (with the associated shift in carbonate equilibrium) by injection of less expensive hydroxide into the 517 Shaft.

Results of the entire treatability study will be considered as part of a broader effort to determine an effective, sustainable approach for mitigating potential impacts of mine water discharge to the Dolores River. The treatability study results may also form the basis for designing and evaluating future treatability tests and larger scale treatment systems, if this treatment approach is pursued further.

1.2 REPORT OVERVIEW

This Report describes the 2012 and 2013 treatability study activities and results. The remaining sections of this Report are organized as follows:

- **Section 2 – Project Overview** summarizes the site background and history and describes the mine workings and drainage. The treatability study approach is also described.
- **Section 3 – 2012 Treatability Study Activities** summarizes the activities conducted during the 2012 injection test.
- **Section 4 – 2012 Treatability Study Results** presents pre-injection conditions, tracer testing results, and changes in water chemistry over the course of the 2012 injection test. Analytical and water quality monitoring results are presented and evaluated in this section.
- **Section 5 – 2013 Treatability Study Activities** summarizes the activities conducted during the 2013 test.
- **Section 6 – 2013 Treatability Study Results** presents pre-injection conditions, tracer testing results, and changes in water chemistry over the course of the 2013 injection test. Analytical and water quality monitoring results are presented and evaluated in this section.
- **Section 7 – Conclusions and Recommendations** summarizes the treatability study findings and conclusions and provides recommendations for future work at the site.
- **Section 8 – References** lists cited documents.

Tables and Figures are included as separate sections after the text. Supporting information is provided in the Appendices.

2.0 PROJECT OVERVIEW

This section briefly summarizes site background information that is relevant to understanding the historical context and physical setting of the site. The treatability study rationale is also presented:

2.1 SITE BACKGROUND

The site is located in the San Juan Mountains of southwestern Colorado, just north of the Town of Rico in Dolores County, Colorado (Figure 1-1). The site consists of the St. Louis Tunnel and associated complex of underground mine workings, as well as a series of settling ponds (Figures 1-2 and 1-3).

Base metals production (particularly lead, zinc, and copper) in the vicinity of the Town of Rico began in the late 1800s, increased in the early 1900s, and peaked in 1927. The St. Louis Tunnel was constructed during 1930 and 1931, allowing exploration for deeper ore

occurrences. In 1939, the Rico-Argentine Mining Company began operating a mine and mill along Silver Creek, opening the mine workings of the Argentine Mine in the vicinity of the present day Blaine and 517 Shaft Access Tunnels (Figures 1-2 and 1-3). A cross-cut from the Argentine Mine on Silver Creek to the St. Louis Tunnel was completed in 1955 (shown as the SE Cross-cut in Figure 1-3).

The Rico-Argentine Mining Company ceased underground mining operations in 1971. The Anaconda Copper Mining Company (Anaconda) acquired the mineral properties and surface assets of the Rico-Argentine Mining Company in 1980 and conducted additional exploration until 1983, but did not produce any ore. Anaconda was later merged into Atlantic Richfield, which sold all of its interests at the site in 1988.

From 1984 to at least 1996, a lime treatment plant treated mine water discharging from the St. Louis Tunnel (Paser, 1996). The system added an average of 600 pounds per day (lbs/d) of quicklime to raise the pH and precipitate heavy metals. Precipitated solids were removed via sedimentation in a series of ponds prior to discharge to the Dolores River. Treatment was eventually discontinued and system components were removed from the site in the mid to late 1990s.

2.2 MINE WORKINGS AND MINE WATER DISCHARGES

The St. Louis Tunnel drains the historical mine workings that extend into Telescope Mountain to the north and Dolores Mountain to the southeast (Figures 1-2 and 1-3). The original portal of the St. Louis Tunnel was located at the western base of Telescope Mountain above the relatively flat Dolores River valley. The St. Louis Tunnel extends about 4,600 feet northeast into Telescope Mountain, where it intersects the NW and SE Cross-cuts (Figure 1-2). The St. Louis Tunnel continues to the northeast about 500 feet beyond the intersection with these cross-cuts in a segment referred to as the 145 Raise. The NW Cross-cut connects the St. Louis Tunnel with the Mountain Spring Mine and other mines that are located generally to the north within Telescope Mountain (URS, 2012). The SE Cross-cut is approximately 4,400 feet long and connects the St. Louis Tunnel with the extensive interconnected Rico-Argentine Mine workings at the 500 level in the southeastern portion of the site in the vicinity of Silver Creek and Dolores Mountain, including the Argentine, Blaine (100 level) and several levels above and below the Blaine Tunnel. The interconnected mine workings (which also include raises, declines, inclines, winzes, and stopes) are partially shown in Figure 1-3.

At least three vertical shafts are connected to the SE Cross-cut, but of these, only the 517 Shaft is safely accessible. The 517 Shaft is connected to the SE Cross-cut by a short drift at the 500 level. This shaft also connects with four levels of mine workings above the

500 level (the 400, 300, 200, and 100 levels) and two deeper levels (the 600 and 700 levels). The 517 Shaft is flooded below the 500 level; the water column in the shaft below the 500 level is approximately 170 feet deep. Tracer tests conducted in 2011 confirmed that the 517 Shaft is hydraulically connected to the St. Louis Tunnel discharge via the SE Cross-cut (URS, 2012). Water enters the 517 Shaft from tunnels at several levels, exits at the 500 Level, and flows through the short drift to the SE Cross-cut. Mine water in the SE Cross-cut flows to the intersection with the St. Louis Tunnel, then flows down the St. Louis Tunnel. Mine water that currently discharges from the St. Louis Tunnel flows through a series of settling ponds before discharging to the Dolores River at monitoring location DR-6, approximately 0.2 mile upstream of the bridge at Colorado State Highway 145, north of the Town of Rico (Figures 1-2 and 1-3).

The discharge rate from the St. Louis Tunnel varies seasonally and annually. During the period from 2011 to 2013, the discharge rate ranged from approximately 400 gallons per minute (gpm) to 900 gpm. Historical observations from August 1980 (presented by Anaconda, 1982) and additional analyses (AMEC, 2013) indicate that the primary mine workings contributing to drainage from the St. Louis Tunnel are the NW Cross-cut (12% to 25% of the flow), the SE Cross-cut (39% to 82% of the flow), and the 145 Raise (less than 10% of the flow). Groundwater seepage into the St. Louis Tunnel (downgradient of the cross-cuts) may contribute to the discharge.

Mine water that discharges from the St. Louis Tunnel has elevated concentrations of several metals, most notably cadmium, manganese, and zinc. Available analytical data indicates that the NW Cross-cut contributes the majority of cadmium, manganese, and zinc. In terms of contaminant loading to the St. Louis Tunnel, the NW Cross-cut contributes 4.5 times more cadmium, 3.9 times more zinc, and 10 times more iron load than the SE Cross-cut, whereas the SE Cross-cut contributes 1.3 times as much sulfate load as the NW Cross-cut (Anaconda, 1982). The Blaine Tunnel was previously thought to be a major contributor of mine water and contaminants that discharge from the St. Louis Tunnel portal due to the high metals concentrations in water samples from the Blaine Tunnel (URS, 2012). However, the Blaine Tunnel may not be a major source of cadmium, manganese, or zinc due to the relatively low discharge rates of mine water from the Blaine Tunnel to the SE Cross-cut (AMEC, 2013), particularly during dry years.

Based on the AMEC (2013) evaluation of data presented by Anaconda (1982), the NW Cross-cut may contribute a substantial fraction of the metal loading that discharges from the St. Louis Tunnel, whereas the SE Cross-cut likely contributes most of the flow. The 145 Raise is a minor contributor to both flow and contaminant load. AMEC (2013) provides additional

information on the current understanding of the mine workings, including mine water flow rates, contaminant concentrations, and their uncertainties.

2.3 TREATABILITY STUDY APPROACH

Geochemical data from past monitoring and investigations at the Blaine Tunnel, 517 Shaft, and St. Louis Tunnel discharge were used to design the treatability study approach. Historical sampling results from Anaconda (1982) as well as newer sampling data (URS, 2012) were considered during design of the treatability study. These data suggested the following:

1. With respect to interaction and attenuation of flows between the Blaine Tunnel and the 517 Shaft:
 - Flows from the Blaine Tunnel typically have low pH and high sulfate and metals concentrations and are the major source of metals loading to the 517 Shaft. Water from the Blaine Tunnel is diluted approximately 3:1 by other sources of water to the 517 Shaft.
 - The pH of the mine water increases between the Blaine Tunnel and the 517 Shaft at the 500-foot level, enough to precipitate iron hydroxide. Because sufficient dissolved oxygen (DO) is available to oxidize iron, approximately 60% of the dissolved iron loading from the Blaine Tunnel is attenuated by formation of iron hydroxide and iron oxide precipitates before reaching the 517 Shaft.
 - The pH does not increase between the Blaine Tunnel and the 517 Shaft sufficiently to precipitate copper, manganese, or cadmium.
2. With respect to metals loading at the St. Louis Tunnel discharge:
 - The NW Cross-cut contributes most of the metals load to the St. Louis Tunnel, but the SE Cross-cut contributes most of the sulfate.¹
 - Manganese loading increases between the 517 Shaft and the St. Louis Tunnel discharge, suggesting that the mine workings north of the St. Louis Tunnel may be a substantial manganese source via the NW Cross-cut.

The treatability study was designed based on this information with the goal of evaluating the effectiveness of injecting alkaline solutions into the 517 Shaft for enhancing the natural attenuation processes in the mine workings. In 2012, potassium carbonate (K_2CO_3) was the primary alkaline chemical injected, but sodium hydroxide (NaOH) was also injected for a short part of the test. During the follow-on 2013 injection test, NaOH was injected to evaluate treatment at a higher pH.

¹ Prior to the injection tests and the completion of the Source Water Controls Report (AMEC, 2013), it was assumed that metals loadings from the NW and SE Cross-cuts were approximately equal.

In both injection tests, increasing the pH and alkalinity of mine water in the 517 Shaft was expected to treat mine water in the SE Cross-cut, including water from the Blaine Tunnel source area, by precipitating metals as carbonates or hydroxides that would subsequently be removed by sedimentation within the mine workings. With high enough dosages of alkaline solutions, this approach can potentially reduce dissolved and total metals concentrations not only in the 517 Shaft, but also in the SE and NW Cross-cuts. This method was implemented and monitored in 2012 and 2013 to evaluate its effectiveness for reducing the mass loading rates of metals in mine water discharging from the St. Louis Tunnel.

3.0 2012 TREATABILITY STUDY ACTIVITIES

This section summarizes the treatability study activities that were completed during the 2012 injection test. Section 3.1 summarizes pre-injection activities; Section 3.2 summarizes the activities over the 42 days of injection; and Section 3.3 describes post-injection activities. A chronological summary of field activities is presented in Table 3-1, and results of the 2012 injection test are presented in Section 4.

3.1 PRE-INJECTION PHASE

The pre-injection phase of the 2012 injection test included geophysical characterization of the 517 Shaft, system construction, and baseline sampling to determine initial geochemical conditions. These pre-injection activities were conducted between September 4 and 26, 2012.

3.1.1 Geophysical Characterization

Geophysical characterization activities were performed between September 4 and 6, 2012 to determine how mine water enters and exits the 517 Shaft, to evaluate the geometry of and physical conditions within the shaft, to evaluate the stratification of water quality parameters within the shaft, and to provide pre-injection water quality data. Results of 2012 geophysical characterization activities are presented elsewhere (AMEC, 2013).

3.1.2 Mobilization and System Construction

During mobilization and setup, materials and supplies were shipped to the site, and the injection system was constructed and tested. System construction and installation included external components (outside the 517 Shaft Access Tunnel, completed by Atlantic Richfield's contractors) and components inside the 517 Shaft Access Tunnel (completed by U.S. EPA and its contractors).

The injection system included the following components (Figure 3-1):

- Three 6,900-gallon polyethylene storage tanks placed inside secondary containment (Spillguard containment berm system from Rain for Rent; 50 feet long by 12 feet wide by 1 foot tall). Additional containment volume was provided by installing piping from the berm system to a separate storage tank placed at a lower elevation. Tank 1 was used for receiving and storage of concentrated 47% K_2CO_3 solution, and Tanks 2 and 3 were used for preparation and storage of injection solutions.
- Fluid transfer lines (2- and 3-inch diameter polyvinyl chloride [PVC]) for chemical transfer and mixing.
- Recirculation pump for chemical transfer and recirculation/mixing of injection solutions.
- Peristaltic injection pump (Flomotion Systems, Model ALH20), with variable frequency drive (VFD) controller and flow rate range of 0.2 to 2.0 gpm.
- Injection line flow meter and totalizer.
- Secondary containment piping (3-inch diameter corrugated polyethylene drainage pipe) for the out-of-tunnel section of the chemical injection line.
- Air relief valve and dual body throttling assembly (Val-Matic ½-inch diameter well service air valve assembly) to prevent the hose from collapsing.
- Textile-reinforced chemical injection hose (½-inch diameter Eaton Aeroquip 2556-08) from the injection pump to top of the 517 Shaft, and from the air relief valve down the 517 Shaft. The lower end of the injection hose was fitted with a PVC injection nozzle, and had a target depth of about 5 feet below the water surface to disperse and promote mixing of the injected solutions.
- In-Situ Troll 9500 data logging sonde probe submerged in the 517 Shaft mine water for measurement of pH and other field parameters.
- Safety equipment, including safety showers and eye wash station.
- Two diesel generators to supply power. An 8-kilowatt (kW) generator was used as the primary power supply, and a 6-kW generator was used as a backup power supply.

Chemicals were delivered to the site and injection solutions were prepared during the pre-injection phase. K_2CO_3 was trucked to the site as a 47% (by weight) solution by Thatcher Chemical Company of Salt Lake City, Utah. The first shipment of about 3,800 gallons of concentrated K_2CO_3 solution was delivered on September 7, 2012. The as-delivered solution was stored in the concentrate storage tank (Tank 1) and transferred to Tanks 2 and 3 for dilution. Four batches of diluted K_2CO_3 injection solution were prepared by diluting the 47% K_2CO_3 solution with Silver Creek water. Based on analytical results for potassium in the

diluted K_2CO_3 solutions and data provided in Table 4 of Armand (1999), the diluted injection solutions were approximately 25% K_2CO_3 by weight. Dilution water for preparing all injection solutions was pumped from Silver Creek. Sand bags were placed partially across the creek near the solution mixing tanks to create a pool, and a submersible pump was used to pump water to the tanks as needed.

3.1.3 Baseline Sampling

Baseline water samples were collected from the 517 Shaft and the St. Louis Tunnel discharge (Figure 1-3) to establish pre-injection water chemistry. Baseline samples of water discharging from the St. Louis Tunnel were obtained on September 5, 2012 from established location DR-3 and on September 26, 2012 from DR-3A, located approximately 70 yards upstream of DR-3, closer to where mine water exits the collapsed St. Louis Tunnel (labeled as "St. Louis Tunnel Portal" in Figure 1-3). All subsequent St. Louis Tunnel discharge treatability study samples were from DR-3A.

Pre-injection water samples from the 517 Shaft were collected on September 5 and September 26, 2012. The September 5 baseline samples were collected from depths of approximately 3 and 43 feet below the water surface by the Layne Christensen Company – Colog Division (Colog) during geophysical characterization of the 517 Shaft (AMEC, 2013). These samples were collected after the Blaine baseflow test (conducted in July 2012) but before discharge of Blaine water to the 517 Shaft during Blaine Tunnel rehabilitation work (August 13 to September 23, 2012). The September 26 baseline sample from the 517 Shaft was collected by U.S. EPA contractor personnel from near the water surface. This baseline sample was collected with a disposable bailer before injection started, but after Blaine water was discharged to the 517 Shaft during rehabilitation work.

Baseline samples were collected and analyzed as described in the Sampling and Analysis Plan (SAP; Appendix A of Atlantic Richfield, 2012). Water quality parameters (pH, temperature, conductivity, ORP, and DO) for each baseline sample were measured in the field using calibrated instrumentation.

3.2 INJECTION PHASE

The injection phase of the 2012 injection test included tracer tests and injection of alkaline solutions. The injection phase started on September 26 and ended on November 8. The 2012 injection phase is summarized as follows:

1. Injection of approximately 25% K_2CO_3 solution to the 517 Shaft at a flow rate of 0.3 gpm, from September 26 through October 24, 2012;

2. Injection of approximately 25% K_2CO_3 solution at an increased flow rate of 0.6 gpm, from October 24 (day 28) to the end of the injection phase on November 8, 2012;
3. Injection of water from Silver Creek at a flow rate of about 25 gpm, starting on October 7, 2012 (day 21) and lasting until the end of the injection phase on November 8, 2012;
4. Injection of 25% NaOH solution at 100 milliliters per minute (mL/min) (0.026 gpm), starting on November 1, 2012 (day 36); and
5. Injection of 25% NaOH solution at an increased flow rate of 200 mL/min (0.052 gpm), from November 4 (day 39) to the end of the injection phase on November 8, 2012 (day 43).

Injection rates are shown graphically in Figure 3-2, and injection phase activities are further described in the following sections.

3.2.1 Tracer Tests

Tracers were injected into the 517 Shaft to confirm the hydraulic connection with the St. Louis Tunnel and to evaluate the hydraulic characteristics of the workings between the 517 Shaft and the St. Louis Tunnel discharge (Atlantic Richfield, 2012). Sodium bromide (NaBr) was injected rapidly (approximating a pulse injection) immediately before the start of K_2CO_3 injection, and lithium chloride (LiCl) was injected continuously during the first 13 days of the injection test with the first batch of K_2CO_3 solution. Additionally, potassium was continuously injected throughout the injection test as part of the K_2CO_3 solution. Each tracer test was implemented under the following assumptions:

- The tracer ions would be conservative and nonreactive, and hence would be transported identically to mine water.
- The tracer ions would be completely conservative and nonreactive.
- The tracer ions were soluble and would mix with the mine water in the 517 Shaft.
- The tracers would not alter the flow of mine water or be impeded within the mine workings.
- The tracers would be measurable in samples from DR-3A.

Tracer ions were analyzed in water samples collected during the treatability study from DR-3A and the 517 Shaft. Results of the 2012 tracer tests are presented and evaluated in Section 4.3.

Rapid Injection – Sodium Bromide

A NaBr solution was rapidly injected to the 517 Shaft before the start of K_2CO_3 injection to approximate a pulse tracer injection. The bromide tracer test data were intended to be used to estimate the RTD for mine water traveling between the 517 Shaft and DR-3A (Section 4.3.1).

The NaBr solution was prepared by dissolving 16 pounds (lbs) of NaBr (Leslie's Pool Supply; item #14130) in about 14 gallons of Silver Creek water. The solution was prepared in a 32-gallon plastic trash can fitted with a ball valve and plumbed to the injection line, upstream of the injection pump (Figure 3-1). The nominal NaBr concentration was about 137,000 milligrams per liter (mg/L) (approximately 31,000 mg/L of sodium and 106,000 mg/L of bromide).

The NaBr solution was injected to the 517 Shaft over about nine minutes on September 26, 2012 (flow rate of approximately 1.6 gpm) using the injection pump and hose. The NaBr solution was chased with about 15 gallons of water from Silver Creek to purge all of the NaBr solution from the injection line. Injection of the alkaline K_2CO_3 solution was initiated shortly after injection of the NaBr solution.

Sodium and bromide concentrations were analyzed in water samples collected at DR-3A for the duration of the 2012 injection test. It was expected that changes in bromide concentrations would serve as the signal for this tracer test because of the relatively high background concentrations of sodium and the relatively low background concentrations of bromide. Results of the NaBr tracer test are presented and evaluated in Section 4.3.1.

Continuous Injection – Lithium Chloride

LiCl was continuously injected for the first 13 days of the injection test to provide another method for assessing the hydraulic characteristics of the mine workings. LiCl was dissolved in the first batch of the K_2CO_3 treatment solution. After preparing about 6,000 gallons of the 25% K_2CO_3 solution in Tank 2, approximately 250 lbs of LiCl (FMC Lithium, Charlotte, North Carolina; product #672-01) were added, yielding a nominal LiCl concentration of about 5,500 mg/L (approximately 900 mg/L as lithium and 4,600 mg/L as chloride). The K_2CO_3 solution with LiCl was then mixed by operating the recirculation pump.

LiCl was injected into the 517 Shaft with the first batch of K_2CO_3 solution using the injection pump. The mixture of LiCl and K_2CO_3 was injected at about 0.3 gpm for the first 13 days of the injection test (from September 26 through October 9, 2012). Lithium and chloride were

analyzed in samples collected at DR-3A, but lithium was the preferred tracer due to lower background concentrations and lower method detection limits relative to chloride. Results of the LiCl tracer test are presented and evaluated in Section 4.3.1.

Continuous Injection – Potassium as Potassium Carbonate

Potassium was continuously injected into the 517 Shaft and monitored at DR-3A throughout the test over the entire 2012 injection test. Solutions with approximately 25% K_2CO_3 were injected at 0.3 gpm from September 26 through October 24, 2012 and at 0.6 gpm from October 24 to November 8, 2012. The K_2CO_3 solutions injected during the test had about 290 grams per liter (g/L) of K_2CO_3 (Table 4 of Armand Products, 1999), or about 162 g/L of potassium.

Under many geochemical conditions, potassium is a conservative, nonreactive material. However, under some conditions, potassium in solution can adsorb to negatively charged soil particles or undergo ion exchange reactions with suspended clay particles. When associated with acid drainage, potassium can also form secondary mineral phases including alunite (amorphous and crystalline phases $KAl_3(SO_4)_2(OH)_6$), apthitalite ($NaK_3(SO_4)_2$), potassium jarosite ($KFe_3(SO_4)_2(OH)_6$), and syngenite ($K_2Ca(SO_4)_2 \cdot H_2O$), the most important probably being the alunite and jarosite. These reactions were considered before the 2012 injection test, and it was concluded that these reactions would not be important under the conditions of the test. Although potassium was expected to be nonreactive and conservative in mine water between the 517 Shaft and the St. Louis Tunnel discharge, the breakthrough curves for lithium and potassium were compared for the portion of the injection test for which lithium and potassium were concurrently injected (see Section 4.3.3); similar curves would indicate that potassium and lithium are similarly nonreactive.

Continuous Injection Calculations

To provide useful data, a continuously injected conservative tracer should achieve a steady-state effluent tracer concentration. The anticipated steady-state effluent concentration can be estimated with a simple mass balance calculation. For continuous, steady-state tracer injection, the equilibrium concentration will occur when the influent and effluent mass flow rates are equal. Mathematically,

$$Q_{out}C_{bkg} + Q_{inj}C_{inj} = (Q_{out} + Q_{inj})C_{eq}$$

$$C_{eq} = \frac{Q_{out}C_{bkg} + Q_{inj}C_{inj}}{Q_{out} + Q_{inj}}$$

where Q_{inj} and C_{inj} are the injection flow rate and concentration, respectively; Q_{out} is the effluent flow rate (at DR-3A); C_{bkg} is the background tracer concentration at DR-3A; and C_{eq} is the expected steady-state equilibrium concentration at DR-3A. This mass balance was used for estimating equilibrium concentrations during continuous tracer injections and for determining if equilibrium conditions had been achieved. This calculation assumes that the system is at steady state (i.e., constant flow rates and tracer contributions from other sources, such as the NW Cross-cut).

3.2.2 Injection of Alkaline Solutions

Figure 3-2 graphically displays the flow rates of the different solutions that were injected to the 517 Shaft during the 2012 injection test. K_2CO_3 solution was injected for the entire duration of the 2012 injection test (September 26 through November 8), and sodium hydroxide (NaOH) was injected during the final week (November 1 through November 8). K_2CO_3 was selected as the initial alkaline injection solution because it is a soluble source of alkalinity, it is readily available in bulk quantities as a concentrated solution, it is more soluble than other available carbonates (e.g., soda ash [Na_2CO_3]) at a given temperature, and it has a low freezing point. The K_2CO_3 solution was initially injected below the water surface in the 517 Shaft with the injection hose discharge nozzle placed at a target depth of five feet below the water surface.

Monitoring over the first ten days of the injection test indicated limited changes in geochemical parameters at DR-3A, which was assumed to be caused by slow transport of injected materials from the 517 Shaft to the SE Cross-cut. To accelerate transport rates and improve mixing, water from Silver Creek was injected at about 25 gpm starting on day 21 (October 7), along with the K_2CO_3 solution. Water was pumped from Silver Creek with a submersible pump, conveyed through a 2-inch diameter PVC line with a totalizing flow meter, and discharged at the 517 Shaft collar. At that time, the K_2CO_3 injection hose was shortened to discharge with Silver Creek water at the shaft collar to prevent ice formation on the vertically suspended injection hose. Carrier water from Silver Creek was injected for the remainder of the injection test, with the exception of brief downtime for equipment repairs, maintenance, and flow adjustments.

Due to limited pH increases at DR-3A, a 25% sodium hydroxide (NaOH) solution was injected during the final week in an attempt to increase the pH throughout the system and improve metals removal. Injection of 25% NaOH solution was initiated on day 36 (November 1). The 25% NaOH solution was delivered to the site in 55-gallon drums, which were stored in an area with secondary containment near the 517 Shaft Access Tunnel portal. A chemical metering pump was used to inject 25% NaOH solution into the PVC pipe used for injection of Silver Creek water (Figure 3-1). For the remainder of the test, the 25% NaOH solution was injected

in-line with Silver Creek water, while the K_2CO_3 solution continued to be injected. All fluids were injected into the 517 Shaft by discharging at the shaft collar. NaOH was injected at 100 mL/min for about three days and at 200 mL/min for the remainder of the injection phase.

Injection totals were as follows: 22,700 gallons of 25% K_2CO_3 solution; 330 gallons of 25% NaOH solution; and 626,800 gallons of Silver Creek water.

3.2.3 Sampling and Analysis

To generate data of acceptable quality that would meet the objectives of the treatability study, a SAP was prepared to specify procedures for monitoring, sample collection, and sample analysis (Appendix A of Atlantic Richfield, 2012). To evaluate the effects of these injections, water quality parameters were continuously monitored and water samples were collected at the 517 Shaft and at DR-3A (downstream of the portal and upstream of existing monitoring location DR-3; Figure 1-2). Samples were sent to Pace Analytical of Lenexa, Kansas (Pace) for analysis of geochemical parameters including dissolved and total metals, alkalinity, and anions. Sampling and analysis procedures are summarized in the following section. Results were compared to baseline (pre-injection) samples to determine geochemical changes and treatment effectiveness. Other samples (i.e., injection solutions, Blaine Tunnel samples, and Silver Creek samples) were collected according to the procedures specified in the SAP. The flow rate at DR-3 was monitored by Anderson Engineering Company Inc. (AECI).

Water quality parameters in the 517 Shaft mine water pool were continuously monitored during the injection test with an In-Situ Troll 9500 data logging probe. The probe was deployed to the 517 Shaft on September 26, 2012, and started logging data about 45 minutes before injection started. The probe was placed about 5 feet below the water surface at about the same target depth as the injection hose discharge nozzle. The probe logged temperature, pH, ORP, and conductivity data at intervals of 1 to 15 minutes throughout the duration of the injection test.

The probe was periodically removed from the shaft for maintenance and recalibration when in-tunnel support personnel were available. When re-deployed, the probe was used to measure water quality parameters as a function of depth within the 517 Shaft mine water pool by slowly lowering the probe to a maximum depth of about 70 feet below the water surface, while logging data. The probe was then placed at a depth of about five feet below the water surface for continued monitoring of water quality parameters.

On October 25, the probe was removed from the 517 Shaft for routine calibration. Ice was observed on the probe cable, due to decreasing ambient and in-mine air temperatures. The

probe was not immediately re-deployed due to concerns that excessive ice would form on the probe cable, adding ice weight to the cable. Thus, no monitoring of field parameters was conducted in the 517 Shaft for about one week (October 25 – November 1, 2012).

Water samples from about 5 feet below the water surface in the 517 Shaft were collected with a bailer on six different occasions. The first sampling event was on September 26, 2012 before the start of the injection test. Subsequent injection phase samples were collected 8, 21, and 35 days after the start of injection. Samples were also collected immediately after injection ended (42 days after the start of injection) and at the end of the post-injection monitoring period (49 days after the start of injection and 7 days after the end of injection).

Water quality parameters were monitored and water samples were collected at DR-3A to determine geochemical changes associated with alkaline injections at the 517 Shaft. Water quality parameters at DR-3A were continuously monitored during the injection test using a YSI 556 multiparameter water quality meter and probe. The probe was suspended vertically in the flow discharging from the St. Louis Tunnel, with the probe tip above the sediment at the bottom of the channel. The instrumentation logged temperature, pH, ORP, DO, and conductivity data for the duration of the test. The instrumentation was periodically recalibrated according to the specifications in the SAP.

Water samples were collected at DR-3A using Hach Sigma 900 autosamplers. Initially, samples were collected at two-hour intervals, and three samples per day were submitted to Pace. On October 5, 2012, the autosampling interval was increased to three hours, and one sample per day was submitted to Pace. Samples that were not sent to Pace were archived in a sample storage refrigerator, in the event that additional analyses would be needed later.

Over the course of the 2012 injection test, four batches of K_2CO_3 solution (about 25% K_2CO_3 by weight) were prepared and injected. Samples from each batch were sent to Pace for analysis to document the injected concentrations. The injection solution samples were collected from a sampling port in the injection line on September 28, October 16, October 30, and November 6, 2012.

3.3 POST-INJECTION PHASE

Injections of K_2CO_3 and NaOH were completed on November 8, 2012, and post-injection monitoring continued through November 14, 2012, to evaluate the return to baseline geochemical conditions at DR-3A and in the 517 Shaft. Demobilization activities included decontamination and disassembly of system components, site restoration, and winterization of the 517 and Blaine Tunnels by removing piping and closing air doors.

3.4 DEVIATIONS FROM THE WORK PLAN

During the 2012 injection test, field conditions and new information resulted in changes to the planned activities that were described in the approved Work Plan (Atlantic Richfield, 2012).

This information was discussed in weekly teleconferences with the project team, which included key personnel from Atlantic Richfield and the U.S. EPA and its contractor personnel. Deviations from the Work Plan included the following:

- The discharge of water from the Blaine Tunnel to the 517 Shaft during Phase I of the Rico-Argentine Mine Rehabilitation Project (Shannon and Wilson, 2012) was not anticipated. During the rehabilitation project, the Blaine Tunnel was dewatered and more than 14,000 gallons of mine water were pumped from the Blaine Tunnel and discharged to the 517 Shaft, potentially altering the initial geochemical conditions within the 517 Shaft and in the mine workings downstream of the shaft. Additionally, the drawdown caused by dewatering in the Blaine Tunnel reduced subsequent loading from the Blaine Tunnel to the 517 Shaft and the SE Cross-cut.² Decreases in metals concentrations observed during the 2012 injection test may be partially attributed to this factor. These potential changes to baseline conditions are evaluated in Section 4.1.2.
- The injection phase was extended from a planned duration of four weeks to about six weeks due to favorable weather conditions.
- LiCl was injected as the continuous tracer rather than lithium hydroxide to reduce safety concerns associated with lithium hydroxide and to potentially provide an additional tracer ion (chloride).
- The Work Plan did not include NaOH injection, although it had been considered during Work Plan development. NaOH was injected from the shaft collar (along with Silver Creek water and K₂CO₃ solution) during the final week of the injection phase in an attempt to raise the pH at DR-3A and improve metals removal.
- A carbon dioxide (CO₂) monitoring and mitigation plan was not included in the Work Plan but was developed, approved, and implemented to ensure that on-site personnel were not subjected to potentially hazardous conditions caused by release of CO₂ during injection of K₂CO₃ and NaOH.
- The SAP (Appendix A of Atlantic Richfield, 2012) stated that up to one sample per day would be collected from the 517 Shaft during the one-week post-injection phase. However, after consultation with the U.S. EPA, the frequency was reduced to two post-injection samples to limit the requirements for in-tunnel support.

² Water from the Blaine Tunnel did not start flowing toward the SE Cross-cut until late November, 2012 (AMEC, 2013) after completion of the 2012 injection test.

4.0 2012 TREATABILITY STUDY RESULTS

This section presents and evaluates the results of the 2012 injection test. Section 4.1 summarizes the results of pre-injection baseline sampling; Section 4.2 describes changes in water chemistry in response to injection of alkaline solutions; and Section 4.3 describes the tracer tests and evaluates the hydraulic characteristics of the system. Complete monitoring results are presented in Appendix A, and laboratory analytical reports are provided in Appendix C.

4.1 BASELINE SAMPLING

Baseline water samples were collected on September 5 and 26, 2012. Analytical results and field-measured water quality parameters are summarized in Table 4-1, and full analytical results are included in Appendix A. The September 5 samples represent baseline geochemical conditions, with mine water from the Blaine Tunnel likely flowing down the Humboldt Drift toward the 517 Shaft and the SE Cross-cut. The September 26 samples were collected to characterize geochemical conditions in the 517 Shaft and at DR-3A immediately before the start of injection. The September 26 samples were collected after more than 14,200 gallons of water from the Blaine Tunnel were directly discharged to the 517 Shaft during Blaine Tunnel rehabilitation activities (Shannon and Wilson, 2012). Water from the Blaine Tunnel generally has low pH and high concentrations of dissolved and total metals, particularly zinc and iron (AMEC, 2013).

Key findings of the pre-injection baseline sampling are as follows:

- Samples from the Blaine Tunnel had the highest ORP, lowest pH, and highest concentrations of metals and anions as compared to samples from the 517 Shaft and from DR-3A, consistent with previous results (URS, 2012).
- The pH increased through the system from the Blaine to the 517 Shaft to DR-3A. Metals concentrations generally decreased during transport of mine water from the Blaine Tunnel to the 517 Shaft. Between the 517 Shaft to DR-3A, metals concentrations decreased and alkalinity increased. These results are consistent with previous findings (URS, 2012).
- The baseline results confirmed that mine water in the accessible part of the Blaine Tunnel has a low pH and high metals concentrations. Although the Blaine Tunnel was previously suspected of being a major source of metals loading due to the high concentrations, a separate evaluation (AMEC, 2013) found that loading rates from the Blaine Tunnel can be a relatively minor component of discharges from the St. Louis Tunnel during dry years, when mine water flow rates from the Blaine Tunnel to the SE cross-cut via the Humboldt Drift are relatively low. Metals from

the Blaine Tunnel are diluted or otherwise attenuated by natural processes that occur during transport through the mine workings.

- Baseline samples from the 517 Shaft had substantially higher pH as compared to previous results (pH of about 6, as compared to pH 2.7 in October 2011; URS, 2012). The near-neutral baseline pH of 6.6 to 6.9 at DR-3 was similar to previous results.
- In samples from the 517 Shaft, total and dissolved concentrations of many metals (including zinc, cadmium, and manganese) decreased slightly between September 5 and 26. Mine water from the Blaine Tunnel rehabilitation work was discharged to the 517 Shaft during this time (Shannon and Wilson, 2012). Although the Blaine Tunnel water had very high total and dissolved iron concentrations (AMEC, 2013), total iron in the 517 Shaft was 59% lower after discharge of Blaine water, possibly due to aeration and precipitation of iron hydroxides under oxidizing conditions. Concentrations of other metals may have decreased as metals were removed by coprecipitation with or sorption to iron hydroxide solids.
- In samples from DR-3A, water quality was affected by the discharge of Blaine Tunnel water to the 517 Shaft between September 5 and 26. The main metals of concern (zinc, cadmium, and manganese) increased by 6% to 10%; alkalinity decreased by about 7%; total iron increased by about 12%; dissolved iron increased by nearly 200%; and the pH decreased slightly (6.6 on September 26 as compared to 6.9 on September 5). These geochemical changes were likely the residual effects of discharging Blaine water to the 517 Shaft. Discharge of Blaine water to the 517 Shaft was completed about 4 days before sampling on September 26, which may not have been long enough for the Blaine water to completely flush from the system.

AMEC (2013) presents additional discussion of these baseline sampling results.

4.2 INJECTION TEST RESULTS

This section describes the geochemical changes in the 517 Shaft and at DR-3A in response to injection of alkaline solutions.

4.2.1 517 Shaft

Water Quality Parameters

Injection of K_2CO_3 rapidly increased the pH and conductivity in the 517 Shaft mine water pool (Figure 4-1). The pH in the 517 Shaft increased from about pH 6 to 9.5 within one hour and to pH 10.6 within 3.5 hours. Within two days, the pH increased to about 10.7, which was the maximum measured pH during injection of only K_2CO_3 . The pH then gradually decreased to about 10.5 over the first 20 days.

Although conductivity underwent a similar rapid initial increase after the start of injection, it continued to increase (Figure 4-1). At about day 20, the pH and conductivity both decreased rapidly when the injection pump VFD shut down due to poor power quality. During this 2 hour power outage, the pH dropped from about 10.5 to about 8.1 (Figure 4-2A).

Injection of Silver Creek water was initiated on October 17, 2012 (day 21). Dilution of the injected solutions with Silver Creek water caused a rapid drop in conductivity and a gradual decrease in pH in the 517 Shaft (Figure 4-1). Due to low air temperatures and concerns that the excessive ice would form on the sonde cable (from Silver Creek water injected at the shaft collar), the sonde was removed from the 517 Shaft between days 29 and 36 and no monitoring data were obtained. The sonde was re-deployed on day 36 before the start of NaOH injection, after the air door in the 517 Tunnel had been closed and ambient temperatures had warmed slightly.

With the start of NaOH injection on day 36, pH increased from about 10.6 to about 10.9 within three days. After the NaOH injection rate was doubled on day 39, the pH increased to a maximum of about 11.6 within three days. Conductivity and pH both gradually decreased after all injections ceased on day 42 (detailed in Figure 4-2B). By the end of the post-injection monitoring period on day 49 (November 14), pH had declined to 7.7, higher than the baseline pH of about 6. Post-injection monitoring was not conducted long enough to reach pre-injection conditions.

The rapid pH change in the 517 Shaft upon addition of K_2CO_3 and the further pH increase upon NaOH injection demonstrate that the injections achieved high pH in the 517 Shaft, with the potential for removing metals via precipitation. However, the pH effects were rapidly reversed in the 517 Shaft when the injections were interrupted, as demonstrated by the rapid pH decreases when injections were halted on days 20 and 42. These observations indicate that the upper part of the 517 Shaft water column was poorly mixed.

Depth Profiles of Water Quality Parameters

Water quality parameters were measured as a function of depth in the upper 70 feet of the 517 Shaft water column when shaft water samples were collected. Depth profiles for pH, conductivity, and temperature (Figure 4-3) were collected by lowering the sonde to below the water surface. The first profile (October 4) was collected when the K_2CO_3 injection rate was 0.3 gpm. The next two profiles (October 25 and 31) were measured when K_2CO_3 was being injected at 0.6 gpm along with 25 gpm of Silver Creek water. The profile on November 7 was completed at the end of the injection phase, immediately after injections of K_2CO_3 , NaOH, and

Silver Creek water were terminated. The final depth profile (November 14) was completed one week after injections were completed and at the end of the post-injection monitoring period, as the system was returning to baseline conditions.

For each depth profiling event, pH was relatively uniform as a function of depth, indicating little or no stratification (Figure 4-3). The pH results for the three October sampling events were very similar, with pH within a narrow range of 10.3 to 10.6 for the entire depth (Figure 4-3). The highest pH values (ranging from 11.4 to 11.7) and conductivities as a function of depth were measured on November 7 during NaOH injection. At the end of the post-injection monitoring period (November 14), pH throughout the 517 had decreased to about 8, with slight variations at about 5 and 65 feet, and conductivity had decreased at all depths. The conductivity increased slightly with depth in several of the profiles, starting at about 30 feet below the water surface. This stratification indicates a lower injection point with upward flow in the shaft or sinking of the dense injection solutions. Although both parameters decreased as the injected alkaline solutions were flushed out the 517 Shaft, neither had returned to the baseline conditions as measured during geophysical characterization on September 5 (AMEC, 2013).

Temperature was relatively uniform with depth during each monitoring event, but the water column temperature did vary during the test (Figure 4-3). Water temperatures were influenced by ambient temperature variations and inputs of water from Silver Creek.

Analytical Results

As the pH increased in the 517 Shaft with injection of K_2CO_3 , alkalinity increased and the concentrations of many metals decreased in the mine water pooled within the shaft. The total alkalinity increased from approximately 30 mg/L as calcium carbonate ($CaCO_3$) at a pH of about 6 (all as bicarbonate alkalinity), to approximately 3,100 mg/L as $CaCO_3$ (primarily as carbonate alkalinity at a pH of about 11.5) with injection of K_2CO_3 (Figure 4-4). Concurrent injection of NaOH and K_2CO_3 resulted in minimal further alkalinity increases, although the form of alkalinity shifted from predominately bicarbonate to carbonate, with a small fraction of hydroxide alkalinity. Alkalinity decreased rapidly after the end of injection, decreasing within one week from about 3,000 to 211 mg/L as $CaCO_3$ (still above the pre-injection total alkalinity of about 30 mg/L as $CaCO_3$) and shifting to bicarbonate. Concurrently, the pH in the 517 Shaft declined from 11.6 to about 7.7 (Figure 4-1). Sulfate concentrations in the 517 Shaft decreased with the injection of K_2CO_3 , but rebounded with the introduction of NaOH (Figure 4-4). By the final 517 Shaft monitoring event, the sulfate concentration was 859 mg/L, within 90 mg/L of the pre-injection sulfate concentration.

Much of the alkalinity injected as K_2CO_3 may have been lost to precipitation of non-target metals such as calcium and magnesium (Figure 4-5). Calcium removal was minimal during the initial K_2CO_3 dosing but improved with higher K_2CO_3 dosing and injection of Silver Creek carrier water. Calcium decreases were likely due to a combination of dilution and softening reactions (precipitation as $CaCO_3$) as carbonate was injected and pH increased. Up to 89% of total calcium was removed during injection of K_2CO_3 , and there was little further increase in calcium removal with injection of NaOH. Total magnesium also decreased, but not to the same extent as calcium. Total magnesium removal increased with higher dosing and injection of NaOH, decreasing by a maximum of 63% (Figure 4-5). Calcium and magnesium concentrations both rebounded after injections ended.

Concentrations of the main metals of concern also decreased in the 517 Shaft in response to injection of K_2CO_3 and NaOH. During the first week of K_2CO_3 injection, total zinc and cadmium decreased in the 517 Shaft by about 50% (Figure 4-6). Both of these metals decreased by about 90% with injection of K_2CO_3 alone and by about 95% with injection of NaOH with K_2CO_3 . Total manganese behaved similarly (Figure 4-7). Manganese removals increased with higher K_2CO_3 dosage and with injection of NaOH, up to a maximum of 95% with injection of NaOH with K_2CO_3 . Concentrations of dissolved zinc, cadmium, and manganese in the 517 Shaft were reduced to less than their respective reporting limits by the end of the injection, indicating excellent removal of these metals with concurrent injection of K_2CO_3 and NaOH. Concentrations of these metals partially rebounded within one week after injection stopped.

Total iron nearly doubled during the first 8 days, then steadily decreased for the remainder of the injection test (Figure 4-7). The initial increase in total iron may have been a result of turbulence caused by injecting liquid into the 517 Shaft, thereby increasing the amount of iron precipitates suspended in the water column and present in the samples. In contrast, dissolved iron decreased to non-detectable levels after the start of the injection test, most likely due to oxidation of dissolved iron and precipitation of iron oxyhydroxide solids when oxygenated water was turbulently mixed into the water column during injection. These effects would decrease the dissolved iron while increasing particulate iron.

Other constituents in the 517 Shaft were also affected by the injections (data provided in Appendix A). For example, total copper decreased by up to 65% at the initial K_2CO_3 dose; copper removal improved to 73% at the higher K_2CO_3 dose, but no further removal of copper was observed with NaOH injection.

4.2.2 DR-3A

Monitoring location DR-3A is located outside the portal of the St. Louis Tunnel. Water quality at that location is affected both by water that flows from the 517 Shaft, and by water that enters the St. Louis Tunnel from other locations.

Water Quality Parameters

At DR-3A, pH increases were less than 0.4 standard units in response to K_2CO_3 and NaOH injections (Figure 4-8). The pre-injection pH was about 6.7, while the maximum recorded pH of about 7.1 was recorded on day 40, when 25% NaOH was being injected at 200 mL/min with 0.6 gpm of 25% K_2CO_3 and 25 gpm of water from Silver Creek. The pH increase at DR-3A was relatively small compared to the pH increase in the 517 Shaft due to dilution and neutralization of alkaline species within the flow system between the 517 Shaft and the St. Louis Tunnel discharge and losses of the injected alkaline solution to the bottom of the 517 Shaft. The injected alkaline solutions would tend to sink due to their greater density relative to the mine water in the 517 Shaft. A 25% K_2CO_3 solution has a specific gravity of about 1.24 (Armand Products, 1999), and a 25% NaOH solution has a specific gravity of about 1.28 (Dow, 2010).

Figure 4-8 also shows conductivity at DR-3A during the injection test. It was expected that the conductivity would increase in response to the injection of K_2CO_3 and NaOH. The conductivity did increase slightly at DR-3A during the first three weeks of the injection test, but gradually decreased after Silver Creek water was introduced. Conductivity at DR-3A continued to decrease after the K_2CO_3 injection rate was doubled and after NaOH injection was initiated. The decline is likely due to dilution of water in the mine workings by lower-conductivity water from Silver Creek..

Analytical Results

One of the goals of the injection test was to increase alkalinity throughout the mine workings to facilitate precipitation of dissolved metals. Total alkalinity at DR-3A (present only as bicarbonate alkalinity during the 2012 injection test) increased by 22% during the first two weeks of injection from about 90 mg/L as $CaCO_3$ to about 110 mg/L as $CaCO_3$ (Figure 4-9). Over the remainder of the test, alkalinity varied slightly but remained within the range of 104 to 121 mg/L as $CaCO_3$. Doubling the K_2CO_3 injection rate and injection of NaOH did not result in further measurable increases in the alkalinity at DR-3A, nor did these changes alter the speciation of alkalinity at DR-3A or increase pH substantially. After the end injections, total alkalinity remained within the range of 105 to 109 mg/L for the final week of monitoring. The post-injection monitoring phase was too short to observe an appreciable decrease in alkalinity.

Sulfate concentrations at DR-3A were largely unchanged (Figure 4-9), despite decreasing by up to 55% in the 517 Shaft during the injection test (Figure 4-4).

Zinc and cadmium at DR-3A behaved similarly during the injection test, decreasing by up to about 40% in response to K_2CO_3 injection (Figure 4-10). Doubling the K_2CO_3 injection rate (starting on day 28) may have slightly improved zinc and cadmium removal, but injecting NaOH (starting on day 36) did not noticeably improve removal of these metals. Manganese concentrations at DR-3A decreased by as much as 25% during the injection test (Figure 4-11). As with zinc and cadmium, manganese decreases were primarily in response to K_2CO_3 injections, with injection of NaOH providing no additional removal of manganese. The highest removals of these three metals were observed within the first two weeks of K_2CO_3 injection.

Total iron was not substantially reduced at DR-3A, but dissolved iron was low during the entire test (Figure 4-11). The highest dissolved iron concentration measured at DR-3A was 1,020 $\mu\text{g/L}$ in the pre-injection sample. All subsequent samples (including samples taken before the effects of injections would have been observed at DR-3A) had dissolved iron ranging from non-detect (less than 50 $\mu\text{g/L}$) to 619 $\mu\text{g/L}$.

Although total calcium concentrations in the 517 Shaft were reduced by up to 89% in response to injections (Figure 4-5), total calcium concentrations at DR-3A decreased by a maximum of 13% within the first two weeks of the injection (Figure 4-12). Similarly, total magnesium concentrations at DR-3A decreased by a maximum of about 22%, in contrast to total magnesium reductions of up to 95% in the 517 Shaft (Figure 4-5).

Presumably, the reductions in metals concentrations at DR-3A were due to precipitation and adsorption of metals during the injection test and settling of precipitates in the mine workings. With the exception of iron, the portion of a metal present as a particulate (i.e., the difference between total and dissolved concentration) was generally no more than 5 to 6% of the total concentration for any given metal. Thus, most metals at DR-3A were present primarily in their dissolved forms, and solids that were formed by precipitation largely were removed by sedimentation within the mine workings. To improve removal of most metals, pH and alkalinity would need to be further increased with higher dosing rates or different chemicals to promote formation of additional solids that can be separated from the flow. Iron at DR-3A was present mostly as solids; thus, a large fraction of iron may be removed by sedimentation after discharge from the St. Louis Tunnel.

The 2012 injection test was suspended before higher NaOH injection rates could be tested, due to the onset of winter weather conditions. After injections were halted, concentrations of most metals at DR-3A started to rebound within two days (Figures 4-10 through 4-12), while alkalinity and sulfate changes were minimal (Figure 4-9). Concentrations of these metals did not increase to pre-injection concentrations during the post-injection monitoring period.

4.2.3 Summary of Geochemical Results – 2012 Injection Test

The 2012 injection test results indicated that injection of K_2CO_3 to the 517 Shaft provided sufficient excess alkalinity to reduce concentrations of zinc, cadmium, manganese, and other metals at the St. Louis Tunnel discharge. The subsequent injection of NaOH was insufficient (in concentration or duration) to further increase the alkalinity and pH or to further decrease metals concentrations at DR-3A. The alkalinity added during K_2CO_3 injection was not sufficient to substantially raise the pH at DR-3A or to precipitate more than 40% of the target metal contaminants in the mine workings between the 517 Shaft and DR-3A. The loss of alkalinity was most likely due to softening mechanisms (i.e., precipitation of calcium as $CaCO_3$) and sinking of the dense injection solution in the 517 Shaft, due in part to the location of the injection point. Effective treatment was also inhibited by a lack of mixing and by injection of the solutions well below the 500 level, which is presumed to be the depth at which mine water flows out of the 517 Shaft. Based on materials testing of the injection hose, the injection point was likely more than 35 feet below the water surface due to injection hose stretch, exacerbating the loss of alkalinity to the lower part of the shaft.

4.3 TRACER STUDY RESULTS

The 2012 injection test commenced on September 26, 2012 with rapid injection of the NaBr solution. This was followed by continuous injection of potassium as K_2CO_3 for the entire injection test and injection of LiCl with the first batch of K_2CO_3 solution over the first 13 days of the test. The results and interpretation of tracer injections are presented in the following subsections.

4.3.1 2012 Pulse Injection of Sodium Bromide

Sodium bromide was injected as a pulse tracer to verify hydraulic communication and to estimate the RTD for fluid traveling between the 517 Shaft and DR-3A (Atlantic Richfield, 2012). It was assumed that NaBr would travel conservatively, with the velocity of water and would be detectable in samples collected from the St. Louis Tunnel discharge.

Bromide was not detected in samples collected from DR-3A after the injection of NaBr; bromide concentrations were below the reporting limit (1 mg/L). Total sodium concentrations

at DR-3A ranged from 10.6 to 12.2 mg/L, virtually indistinguishable from the pre-injection concentration of 11.5 mg/L. With no discernible bromide or sodium peaks at DR-3A, these results indicated that insufficient NaBr had been injected and/or that the injected NaBr was not transported to DR-3A.

Samples collected from the 517 Shaft both before and after NaBr injection also had bromide below the reporting limit, and total sodium concentrations in the 517 Shaft did not increase until after the start of NaOH injection. These results indicate that sodium bromide was stored in the shaft in areas that were not sampled (i.e., the dense NaBr solution sank in the shaft [specific gravity of about 1.2]) or that NaBr was diluted in the system to concentrations that were not detectable in samples collected from the 517 Shaft or from DR-3A.

Because distinct bromide and sodium peaks did not appear at DR-3A, the RTD could not be evaluated using pulse tracer injection data.

4.3.2 2012 Continuous Injection of Lithium Chloride

Lithium chloride was continuously injected for about two weeks with the first batch of K_2CO_3 solution to confirm the hydraulic connection between the 517 Shaft and DR-3A. Based on travel times from the URS (2012) tracer test, the expectation was that lithium would reach a steady-state concentration at DR-3A while being continuously injected. No further lithium chloride was injected after the first batch of K_2CO_3 solution, so DR-3A lithium concentrations were expected to gradually decrease.

Lithium and chloride concentrations at DR-3A increased and slowly approached their expected equilibrium concentrations at DR-3A (Figure 4-13). Lithium concentrations at DR-3A increased above the baseline concentration between samples taken about two days after the start of injection, confirming a hydraulic connection between the 517 Shaft and DR-3A. The lithium concentration at DR-3A increased at a rate of about 7.7 $\mu\text{g/L}$ per day over the first 10 days of injection and then increased at a faster rate (about 68 $\mu\text{g/L}$ per day) between days 10 and 13. The peak lithium concentration at DR-3A was detected about two weeks after the start of injection, corresponding to about one day after completing the injection of lithium chloride tracer. The peak lithium concentration at DR-3A was 290 $\mu\text{g/L}$, about 26% lower than the expected steady-state lithium concentration of 392 $\mu\text{g/L}$. These results suggest that lithium did not reach a steady-state concentration at DR-3A before starting to decrease as the injected lithium was flushed from the system, probably because of a lack of mixing into the flowing portion of the SE Cross-cut. The DR-3A lithium concentration had decreased to about 40 $\mu\text{g/L}$ after 46 days (Figure 4-13), about 37% higher than the background concentration of 29 $\mu\text{g/L}$.

Chloride behaved similarly to lithium (Figure 4-13), reaching its maximum concentration in about two weeks. However, initial chloride increases could not be detected, and the calculated mass recovery of chloride was less than 1%. Although chloride may be retained in the mine workings to a greater extent than lithium, the low mass recovery is likely due to the relatively high detection limit (0.5 mg/L) for chloride, which prevented quantification of low chloride concentrations as part of the numerical integration.³

A mass balance on lithium was calculated by numerically integrating the mass flow of lithium at DR-3A (the product of DR-3A flow rate and lithium concentration) over the entire 2012 monitoring period and comparing to the injected mass of lithium. About 64.5% of the injected lithium was recovered by the time the monitoring was terminated, based on injection of 250 lbs of lithium chloride (equivalent to 41 lbs of lithium). The remaining 35.5% of the lithium was likely stored in various reservoirs within the mine workings, such as the bottom of the 517 Shaft (below the 500 level discharge to the SE Cross-cut). This stored lithium likely continued to leave the 517 Shaft at very low concentrations well after completion of the injection test. Additional monitoring may have improved mass recovery if lithium continued to exit the system above its background concentration.

Lithium hydroxide was injected as a pulse to the 517 Shaft during previous tracer studies (URS, 2012). During the tracer studies conducted in October 2011, lithium was first detected at DR-3 about 15 hours after injection, and the peak lithium concentration occurred about 21 hours after injection, considerably faster than the travel time for lithium observed in 2012. The longer travel times during the 2012 tracer test indicate lower flow rates between the 517 Shaft and the St. Louis Tunnel discharge, likely due to the relatively dry water year in 2012.⁴ Based on the tracer test results, URS (2012) suggested that the mine workings have a two-phase flow system: fast transport via advection in the main flow channel, and slower transport via diffusion of tracers from mass storage reservoirs or interactions with rock and sediment. The 2012 tracer test results, specifically the relatively low lithium recovery, the changing rate of lithium concentration increase, and the slow decrease toward the background lithium concentration, may also be explained by these mechanisms.

³ The expected chloride concentration was about 2 mg/L (as shown in Figure 4-13), but the method detection limit for chloride was 0.5 mg/L.

⁴ Data from NRCS (2013) indicate that total precipitation for the 2011 water year (October 1, 2010 to September 30, 2011) was about 29.8 inches, whereas total precipitation for the 2012 water year (October 1, 2011 to September 30, 2012) was about 24.8 inches. Lower precipitation results in lower flows from the mine workings (AECOM, 2013).

4.3.3 2012 Continuous Injection of Potassium Carbonate

Figure 4-14 compares the potassium and lithium breakthrough curves at DR-3A, as well as the expected equilibrium potassium concentrations during injection of the first two batches of K_2CO_3 solution.⁵ Figure 4-15 also shows the first part of the potassium and lithium breakthrough curves, with results for each normalized to the peak concentration detected at DR-3A.

As with lithium, potassium concentrations slowly increased at DR-3A over the first 10 days of the test, after which the rate of increase was faster through day 13. During injection of the first batch, the potassium concentration peaked at 75 mg/L on October 9 (13 days after injection started). This was lower than the expected equilibrium concentration of about 85 mg/L.⁶

During injection of the second batch of K_2CO_3 solution (October 9 to 23), the potassium concentration ranged from about 56 mg/L to a peak of about 87 mg/L on October 17 (day 21). The expected equilibrium potassium concentration was 77 mg/L.⁷ Although the potassium concentration was not steady, it did approach the expected equilibrium concentration while Batch 2 was being injected (and after the initiation of Silver Creek water injection), indicating that the system approximated steady-state flow conditions.

After the K_2CO_3 injection rate was doubled from 0.3 to 0.6 gpm on October 24 (28 days after start of injection), potassium concentrations at DR-3A did not increase to the expected equilibrium concentration of 188 mg/L,⁸ and in fact, gradually decreased during injection of Batches 3 and 4 (Figure 4-14). From the available data, it is unclear why potassium did not increase as additional K_2CO_3 was injected after day 28 and why potassium concentrations decreased further after the start of NaOH injection on day 36. These results suggest that potassium may not be conservative under the conditions present when NaOH was injected (i.e., the 517 Shaft pH increased from about 10.6 to about 11.6). The apparent loss of potassium may also have been due to sinking of the injected solutions in the 517 Shaft or retention elsewhere within the mine workings.

These results (particularly the normalized breakthrough curves shown in Figure 4-15) indicate that lithium and potassium behaved similarly during transport between the 517 Shaft and

⁵ Potassium analytical data for the third and fourth batches are suspect and are thus not included in this analysis.

⁶ Based on the total potassium concentration in Batch 1 (173,000 mg/L), an injection rate of 0.3 gpm, and a flow rate of 612 gpm at DR-3A

⁷ Based on the total potassium concentration in Batch 2 (158,000 mg/L), the injection rate of 0.3 gpm, and a flow rate of 612 gpm at DR-3A

⁸ Based on the higher potassium concentration in Batch 3 (190,000 mg/L) and a higher injection rate (0.6 gpm) for most of Batch 3.

DR-3A during the early part of the injection phase. However, potassium appeared to be non-conservative later in the test, particularly after the start of NaOH injection.

4.3.4 2012 Sodium as a Tracer

Although sodium chloride was considered as a short-term tracer chemical (Atlantic Richfield, 2012), it was not selected as the primary tracer because of the relatively high background concentrations of sodium (about 10 to 12 mg/L in DR-3 baseline samples; Table 4-2). Sodium was injected with the initial pulse injection of sodium bromide on September 26 and with the 25% NaOH solution that was injected from November 1 to November 8. Figure 4-16 shows that the sodium concentrations at DR-3A did increase noticeably in response to the initial pulse injection of NaBr and did not achieve the expected steady-state concentration at DR-3A during or after the injection of NaOH. Because there was no definitive change in sodium concentration at DR-3A, sodium data from the 2012 injection test were not useful for tracer analysis.

4.3.5 Residence Time Distribution Analysis

The tracer tests confirmed the hydraulic connection between the 517 Shaft and DR-3A. Additionally, reactor analysis principles (Levenspiel, 1999; Metcalf and Eddy, Inc., 2003; Fogler, 2005) were used to evaluate the hydraulic characteristics of the mine workings. The hydraulic characteristics of any reactor can be described by its residence time distribution (RTD), which quantitatively describes the distribution of residence times for fluid particles traveling through the reactor based on the tracer concentrations at the effluent. The RTD can be used to determine the average hydraulic residence time (HRT) and the degree of transport and mixing that occurs in a reactor, even for systems with non-ideal flow conditions such as stagnation and short-circuiting. The RTD function is derived from the effluent tracer concentrations produced by pulse or step input tracer tests.

Table 4-3 summarizes the results of the tracer test data analyses. Based on an evaluation of 2012 lithium tracer results, the mean HRT during the first two weeks of the injection test was 10.8 days (shown in Figure 4-15); based on potassium results, the mean HRT was 11.0 days. As expected based on the similar concentration curves for lithium and potassium, these results are in good agreement. Further, the long residence times as calculated from the tracer test results corroborate the conclusions based on observations during the injection test (i.e., slow changes in geochemical conditions at DR-3A). These results substantiate slow mass transfer and slow travel time between the 517 Shaft and DR-3A and justify the need for injection of carrier water from Silver Creek during low water years such as 2012.

The variance of the RTD is an indicator of the spread of the distribution; larger variances indicate a larger degree of spreading or dispersion within the system. For the 2012 lithium tracer test, the variance was 26.2 days squared (d^2), while the variance for potassium tracer test was 25.5 d^2 . As with the calculated HRTs, these results agree well.

Similar analyses were performed using lithium tracer test data from October 2011 (URS, 2012; data reproduced in Figure 4-17). Lithium traveled through the reactor much faster than in the 2012 tests, with the peak reaching DR-3A at about 21 hours. The mean HRT was calculated as 9.3 days and the variance 110.5 d^2 .

Although the 2011 and 2012 tracer tests were conducted under different conditions and using different techniques, the mean HRTs are comparable (within 20%). In the 2011 tracer test, the initial appearance of lithium at DR-3A was faster and the mean HRT was shorter, implying and faster transport between the 517 Shaft and DR-3A. These differences are likely due to the wetter year in 2011 (i.e., higher flow rates within the mine workings) and the injection of 50,000 gallons of chase water immediately after the 2011 tracer injection (URS, 2012).

5.0 2013 TREATABILITY STUDY ACTIVITIES

This section summarizes the 2013 injection test, which was conducted between June 21 and July 9 as a follow-on to the 2012 injection test. Section 5.1 summarizes pre-injection activities; Section 5.2 summarizes the activities over the 18 days of injection; and Section 5.3 describes post-injection activities. A chronological summary of field activities is presented in Table 5-1, and results of the 2013 injection test are presented in Section 6.

5.1 PRE-INJECTION PHASE

The pre-injection phase of the 2013 injection test consisted of further geophysical characterization of the 517 Shaft, injection test mobilization, system construction, and baseline sampling.

5.1.1 Geophysical Characterization

Pre-construction geophysical testing was conducted at the 517 Shaft and Blaine Tunnel from May 13 to May 17. This section briefly summarizes the geophysical characterization activities; results are presented by AMEC (2013). Field crews performed downhole video imaging of the 517 Shaft, collected water samples at discrete depths in the 517 Shaft, measured vertical and horizontal flows, and measured depth and flow at the coffer dam in the Blaine Tunnel.

Additional geophysical testing and baseline water quality sampling were conducted between June 17 and 21, during the final week of the injection system construction. Water levels were measured in the 517 Shaft, water samples were collected for analysis, and a sonar survey was performed in the mine pool to an approximate depth of 84 feet below the water surface (about 538 feet below the shaft collar). Water quality parameters were measured with a Troll 9500 multi-parameter sonde which remained deployed in the shaft for the duration of the 2013 injection test.

5.1.2 Mobilization and System Construction

Site preparation for the injection system started in early June and treatment system construction began on June 10. Mobilization and construction activities included delivery of system components and materials to the site; placement of system components; installation of electrical conductor and conduit, flow measurement equipment, and in-tunnel and out of tunnel plumbing. A leak test was performed on system components that would be exposed to injection chemicals and a wet test of all the conveyance lines was performed after assembly. Following successful completion of the testing, approximately 4,500 gallons of 25% NaOH was delivered to the site and transferred into the chemical injection tank.

The primary injection solution for the 2013 test was 25% NaOH, although 47% potassium carbonate (K_2CO_3) solution was also considered as a secondary injection chemical. System components were chemically compatible with both of these solutions. The system included secondary containment for all parts of the system outside the 517 Shaft Access Tunnel. The system was capable of variable chemical injection rates, use of different injection chemicals, and use of a chemical tracer, if desired. The system also included safety showers and eyewash stations.

A piping and instrumentation diagram for the 2013 chemical injection system is provided as Figure 5-1. The 2013 injection system was similar to the system that was constructed in 2012 (described in Section 3.1), with the following differences:

- The 2013 injection system was designed with two parallel injection lines, one for NaOH and one for K_2CO_3 . Each line included a chemical storage tank, peristaltic injection pump with variable frequency drive (VFD), and a flow meter. This configuration allowed switching between NaOH to K_2CO_3 or combined injection of these chemicals, if the water chemistry conditions indicated a chemical change was needed.
- A 10,000-gallon, double-walled steel tank with interior epoxy coating was selected for NaOH storage based on its chemical compatibility, security, leak detection and secondary containment attributes. The tank was equipped with a 2-inch Kamlock®

fitting for chemical filling and a top-feed suction tube for chemical dispensing into the injection system. Liquid levels in the tank were measured with an ultrasonic level transducer and a level indicator mounted on the electrical panel. The entire tank was enclosed in a spill guard to provide tertiary containment in the chemical storage area. The K_2CO_3 storage tank was not mobilized to the site.

- Two different size peristaltic pumps were available for each injection line to handle the anticipated range of chemical injection flow rates for the 2013 injection test of 600 to 2,000 mL/min.
- Injection pumps were contained in a weather-proof enclosure with a sump to contain potential chemical leaks.
- Two 35-kW diesel generators, operating in a primary-secondary fashion, provided power to the system.
- The electrical system was equipped with an automatic transfer switch to transfer power from the primary generator to the secondary generator in the event of a primary generator power loss.
- A chemically compatible ½-inch inner diameter hose with a synthetic rubber inner liner and braided steel reinforcement (Gates Global M3K Mega3000 ® Hose) was chosen for delivery of the chemicals from the storage tanks to the mine pool in the 517 Shaft. The injection hose was placed inside 3-inch PVC conduit from the spill guard berm to a point just inside the 517 tunnel for secondary containment.

The system included provisions for injection of water from Silver Creek (carrier water) to promote chemical mixing in the 517 Shaft and to enhance flow out of the shaft to the SE Cross-cut. A submersible pump with a design flow rate of 25 gpm was placed in Silver Creek and plumbed to the 517 Shaft with an in-line flow meter and a control valve.

5.1.3 Baseline Sampling

To establish pre-injection geochemical conditions, baseline water samples were collected from the 517 Shaft and from DR-3A and analyzed in accordance with the SAP for the Injection test (Appendix A of Atlantic Richfield, 2012) and the Quality Assurance Project Plan in the Work Plan Addendum (Atlantic Richfield, 2013). Water quality parameters (pH, temperature, conductivity, ORP, and DO) were measured at all baseline sampling locations.

The initial baseline samples were collected on April 30 when U.S. EPA and CDRMS contractors entered the 517 and Blaine tunnels to assess the conditions, measure water quality parameters, and collect water samples. The sample from the 517 Shaft was collected from the water surface (about 450 feet below the shaft collar) with a disposable bailer. Additional baseline samples were collected from the 517 Shaft on June 16 and 17 during geophysical characterization. One water sample was collected at the water surface and three

depth-discrete samples were collected in the water column (12, 37, and 57 feet below the water surface).

The final pre-injection sample from the 517 Shaft was collected on June 19 by U.S. EPA contractor personnel during in-tunnel injection system construction. Baseline samples were also collected from DR-3A and from Silver Creek.

5.2 INJECTION PHASE

Operation of the injection system began on June 21 with injection of 25% NaOH at an injection rate of 600 mL/min. Sodium injected with the 25% NaOH solution was used as a continuously injected tracer; no separate tracer was injected as in the 2012 injection test. Due to minimal changes at DR-3A, injection carrier water from Silver Creek at 25 gpm was started on June 27.

Between June 21 and July 9 (when injections ended), approximately 4,180 gallons of 25% NaOH solution (equivalent to about 11,200 pounds of NaOH) and 395,000 gallons of Silver Creek water were injected into the 517 Shaft. Although the 2013 injection test was planned for a longer duration than the 2012 injection test to allow equilibrium concentrations to be established at DR-3A, the 2013 injection test was stopped after 18 days of injection due to seepage from an injection system valve (see Section 5.3).

5.2.1 Sampling and Analysis

Sampling and monitoring were conducted at DR-3A and in the 517 Shaft during the 2013 injection test to determine the geochemical effects of NaOH injection. Sampling and analysis procedures were similar to those used during the 2012 injection test (Section 3.2).

Starting two days before the start of injection, four water samples were collected with a bailer from about five feet below the water surface in the 517 Shaft. The second sampling event was on July 9, which turned out to be a post-injection sample. Post-injection samples were also collected from the 517 Shaft on July 20 and August 21 (six weeks after the end of injection, and the end of the post-injection monitoring period).

Water samples from DR-3A were collected at 8-hour intervals using Hach Sigma 900 autosamplers beginning with system startup on June 21. The samples were retrieved on a daily basis and either stored in a cooler or sent to Pace for analysis; samples were sent to Pace approximately every two days. Sample collection and analysis frequency was reduced to one sample every three to four days on July 31 and to one sample per week on August 19. The final DR-3A sample was collected on September 16.

Water quality parameters (temperature, pH, conductivity, and ORP) in the 517 Shaft mine water pool were continuously monitored during the injection test with an In-Situ Troll 9500 data logging instrument, which was deployed about two days before the start of injection. The target sensor depth was about 5 feet below the water surface, at about the same target depth as the injection hose discharge nozzle. Similar water quality parameters (plus DO) were also continuously recorded at DR-3A using a YSI 6920 multi-parameter sonde from June 18 through July 31. After this, water quality parameters were measured using the YSI 6920 when DR-3A samples were collected. Data from both locations were periodically downloaded to a laptop computer.

5.3 POST-INJECTION PHASE

On July 9, the injection test was terminated due to potential concerns with inadequate mixing down the shaft. Post-injection monitoring continued at DR-3A through August 21, 2013, to evaluate the return to baseline geochemical conditions at DR-3A and in the 517 Shaft.

5.4 DEVIATIONS FROM THE WORK PLAN

The 2013 injection test was shorter than had been proposed in the approved Work Plan Addendum (Atlantic Richfield, 2013). The major changes that occurred due to the shortened duration of the injection test included the following:

- The NaOH injection rate was not modified. The Work Plan Amendment stated that the NaOH injection rate would be increased if pH did not increase and/or metals concentrations at DR-3A did not decrease substantially. The Work Plan Amendment stated that the NaOH injection rate could be decreased if the pH exceeded 8.5 at DR-3A and/or metals concentrations decreased substantially.
- The provisions for injection of K_2CO_3 along with NaOH were not implemented. Injection of K_2CO_3 had been proposed if carbonate alkalinity did not increase, or if metals (e.g., zinc) that precipitate as carbonates showed no decreasing concentration trends.
- Pulse injection tracer tests were planned but not executed. Up to three short-term tracer injections were proposed for the 2013 injection test.

6.0 2013 TREATABILITY STUDY RESULTS

This section presents and evaluates the geochemical results of the 2013 injection test, and where appropriate, includes comparisons to the results of the 2012 injection test. Section 6.1 summarizes the results of pre-injection characterization; Section 6.2 describes changes in water chemistry in response to 2013 injection of NaOH and evaluates the results; and Section

6.3 describes the 2013 tracer test results. Complete monitoring results for the 2013 injection test are presented in Appendix B.

6.1 BASELINE SAMPLING RESULTS

Analytical results and field-measured parameters of baseline samples are summarized in Tables 4-1 and 4-2, and full analytical results for the 2013 injection test are included in Appendix B.

Baseline samples from the 517 Shaft were collected on April 30, May 16, and June 19 from within 5 feet of the water surface. These samples had near-neutral pHs ranging from 6.9 to 7, somewhat higher than the baseline pH from 2012 (pH of 6.1), but lower than the final pH of 7.7 measured on November 14, 2012 at the end of the 2012 injection test. Total alkalinity in the three baseline samples ranged from 215 to 252 mg/L as CaCO_3 , slightly higher than the total alkalinity of 211 mg/L as CaCO_3 measured in the final 517 Shaft sample from the 2012 injection test. Although the pH had dropped slightly since the end of the 2012 injection, alkalinity was slightly higher than the post-2012 result, indicating that the alkalinity increases from the 2012 injection test were sustained, possibly due to slow dissolution of alkaline solutions that had sunk in the 517 Shaft after injected. This was confirmed by potassium concentrations that continued to decline in subsequent months indicating slow diffusion of stored potassium from the shaft.

Metals and alkalinity concentrations in the 2013 baseline samples from the 517 Shaft were considerably lower than 2012 baseline samples from the same location, indicating that metals concentrations had not yet rebounded to 2012 pre-injection concentrations. Interestingly, the 2013 pre-injection concentrations of many metals were similar to or less than their concentrations at the end of the 2012 post-injection monitoring period (final sample taken on November 14, 2012) indicating continuing residual chemical treatment of metals. Baseline zinc concentrations in 2013 (total zinc ranging from 2,830 to 3,680 $\mu\text{g/L}$) were similar to zinc concentrations measured at the end of the 2012 injection test (total zinc of 3,210 $\mu\text{g/L}$), and baseline concentrations of cadmium, manganese, and iron in 2013 were all slightly lower than concentrations at the end of the 2012 post-injection monitoring period. These results indicate that the effects of reagent solutions and alkaline minerals precipitated during the 2012 injections persisted for five months in the 517 Shaft.

Baseline samples from DR-3A were collected on June 19, about two days before the start of NaOH injection. The 2013 baseline pH was 6.8, virtually the same as the pH at the end of 2012 post-injection monitoring and similar to the 2012 baseline pH at DR-3A (Table 4-2). The baseline total alkalinity was slightly less than final 2012 result and similar to 2012 baseline

total alkalinity. These results indicate that pH and alkalinity effects at DR-3A due to the 2012 injections did not persist within the mine workings to the St. Louis Tunnel discharge. Metals concentrations (zinc, cadmium, manganese, and iron) in the 2013 DR-3A baseline sample were slightly higher than the metals concentrations in the pre-injection samples from the 517 Shaft, indicating that other sources are important contributors to the contaminant loading at the St. Louis Tunnel discharge.

Baseline concentrations of zinc and cadmium at DR-3A were similar in 2013 to their 2012 baseline concentrations, but higher than their concentrations at the end of the 2012 post-injection monitoring. The 2013 baseline manganese concentrations were slightly lower than 2012 baseline manganese concentrations, but similar to manganese concentrations at the end of 2012 post-injection monitoring. In contrast, the 2013 baseline iron concentrations were higher than both the 2012 baseline and 2012 final iron concentrations at DR-3A. The cause of elevated iron concentrations in the 2013 baseline sample from DR-3A is uncertain.

6.2 INJECTION TEST RESULTS

This section describes the geochemical changes in the 517 Shaft and at DR-3A in response to 2013 injection of NaOH solution.

6.2.1 517 Shaft

Water Quality Parameters

Injection of NaOH increased the pH and alkalinity and substantially decreased metals concentrations in the 517 Shaft mine water pool. The pH of water in the 517 Shaft increased from an initial pH of about 6.9 to about 9.4 within about 3.5 days of starting the injection (Figure 6-1). An additional pH increase occurred after starting the injection of carrier water from Silver Creek on day 6, indicating that injection of carrier water improved mixing within the shaft. The maximum recorded pH in the 517 Shaft was about 12.8, achieved about two weeks after the start of injection (Figure 6-1). The pH gradually decreased after NaOH injection ended, and the final measured pH of 7.1 was slightly above the pre-injection pH of 6.9.

Conductivity increased slightly after start of NaOH injection, decreased after injection pump shut downs, and increased substantially after starting injection of Silver Creek water, most likely due to improved mixing of NaOH into the mine water pool (Figure 6-1). The water temperature in the 517 Shaft decreased rapidly after injection of Silver Creek water was initiated and increased after injections ended, indicating that the colder creek water influenced the temperature of the mine water in the 517 Shaft. Water quality parameters measured in

the 517 Shaft demonstrate that injection of Silver Creek water to the 517 Shaft improved mixing within the 517 Shaft mine water pool.

Depth Profile of Water Quality Parameters

Water quality parameters were measured as a function of depth in the 517 Shaft water column on July 10, 2013, the day after NaOH injection was terminated (Figure 6-2). The depth profiles for pH, conductivity, and temperature were collected by lowering the sonde to about 70 feet below the water surface in the 517 Shaft. Temperature and pH were relatively uniform with depth, although these parameters varied slightly below a depth of 50 feet; pH also remained elevated one day after NaOH injection ended. Conductivity in the upper part of the water column also varied little, but increased to a greater extent (by about 16%) below a depth 50 feet. The sharp increase in conductivity below a depth of 50 feet indicates stratification within the shaft, most likely due to an injection location that was at least 40 feet below the water surface. This injection depth was deeper than targeted due to elongation of the injection hose. The slight changes in water quality parameters that were observed with depth in 2012 (Figure 4-3) may indicate better mixing throughout the water column during the 2012 injection test.

Analytical Results

Total alkalinity in the 517 Shaft increased from approximately 252 mg/L as CaCO_3 to 978 mg/L as CaCO_3 after 18 days of NaOH injection (Figure 6-3). During injection, the predominant form of alkalinity shifted from 100% bicarbonate to 53% carbonate alkalinity and 47% hydroxide alkalinity. After injection, total alkalinity in the 517 Shaft decreased, with a shift back to bicarbonate alkalinity. The final total alkalinity (330 mg/L as CaCO_3 , all as bicarbonate) was about 30% higher than the pre-injection total alkalinity.

The total alkalinity increase and maximum total alkalinity achieved in the 517 Shaft during the 2013 injection test (Figure 6-3) were considerably less than those observed during the 2012 injection of K_2CO_3 (Figure 4-4), despite the higher peak pH achieved during the 2013 injection test (12.8 in 2013 [Figure 6-1] compared to 11.7 during the 2012 injection test [Figure 4-1]). The highest total alkalinity detected during 2013 was 978 mg/L as CaCO_3 , about 32% of the highest total alkalinity detected during the 2012 injection test (3,080 mg/L as CaCO_3). Additionally, the peak carbonate alkalinity in 2013 (522 mg/L as CaCO_3) was only 18% of the peak carbonate alkalinity achieved in the 2012 injection test (2,930 mg/L as CaCO_3). These differences were probably caused primarily by different alkalinity input rates. The alkalinity input rate during the 2013 injection test was about 4.8 equivalents per minute (eq/min) (600 mL/min of 25% NaOH solution), considerably lower than the alkalinity input rate of about

11.8 eq/min at the end of the 2012 injection test (0.6 gpm of 25% K_2CO_3 solution with 200 mL/min of 25% NaOH solution). Differences in alkalinity results may also indicate differences in sampling and monitoring locations relative to the injection point during each test and different mixing characteristics in the shaft during the 2012 and 2013 injection tests.

Sulfate and metals concentrations in the 517 Shaft generally decreased in response to NaOH injection, but rebounded after NaOH injection was terminated, similar to what was observed during the 2012 injection test. In the 2013 test, sulfate in the 517 Shaft decreased by 94%,⁹ possibly due to precipitation with calcium (Figure 6-3). Results of the 2012 injection test suggested that much of the injected alkalinity was consumed via precipitation of non-target metals, primarily calcium and magnesium (Figure 4-5). During the 2013 injection test, total calcium and magnesium in the 517 Shaft were reduced by up to 86% and 62%, respectively (Figure 6-4). These removals are comparable to the calcium and magnesium removals observed during the 2012 injection test, despite the lower measured alkalinity during the 2013 injection test. These results indicate that injection of 25% NaOH precipitates non-target metals in the 517 Shaft.

When compared to concentrations measured immediately before the start of NaOH injection, total zinc and cadmium concentrations in the 517 Shaft decreased by up to 86% and 94%, respectively (Figure 6-5) and total manganese decreased by up to 87%, while the total iron concentration varied little during injection (Figure 6-6). After injection, concentrations of most metals in the 517 Shaft generally rebounded to levels approaching pre-injection concentrations. Manganese and iron concentrations both rebounded rapidly and had final measured concentrations exceeding baseline concentrations (Figure 6-6).

6.2.2 DR-3A Monitoring

At DR-3A, pH increased slightly from pH 6.8 pre-injection to a maximum of pH 7.0 at the end of the injection (Figure 6-7). As was observed during the 2012 injection test, the small pH change at DR-3A relative to the large pH increase observed at the 517 Shaft was likely due to neutralization of alkaline chemicals as the alkaline-solution amended mine water flowed through the mine workings between the 517 Shaft and DR-3A. Alkalinity at DR-3A (detected as bicarbonate only) increased by about 24% during injection and continued to increase during the post-injection monitoring period (Figure 6-8), much smaller than the 400% increase at the 517 Shaft.

⁹ Percent removals reported in this section are calculated using final pre-injection sample (June 19, 2013) and the lowest concentration detected in 517 Shaft samples collected after the start of injection.

Much of the alkalinity injected into the 517 Shaft as NaOH was apparently lost due to neutralization within the mine workings or precipitation of non-target metals. Some of the dense NaOH solution may have sunk in the shaft due to lack of mixing at the injection point, which was likely more than 35 feet below the water surface due to elongation of the injection hose while hanging vertically in the shaft. As with the 2012 test, the loss of alkalinity to the bottom of the shaft resulted in an insufficient alkalinity dose being transported through the SE Cross-cut to adequately treat waters entering the system from the NW Cross-cut or the 145 Raise. The post-injection alkalinity increase at DR-3A is attributed to slow flushing of NaOH from the shaft after injection was terminated.

In response to the injection of NaOH to the 517 Shaft, total calcium and magnesium concentrations at DR-3A both decreased by up to 13% (Figure 6-9). Total zinc and cadmium were reduced by 20% and 26%, respectively (Figure 6-10), and total manganese and iron were decreased by up to 11% and 55%, respectively (Figure 6-11). These metals reductions at DR-3A occurred despite the limited increase in pH and alkalinity, indicating that much of the contaminant loading contributed to the St. Louis Tunnel by the SE Cross-cut was eliminated by injection of NaOH at the 517 Shaft. Most of these metals rebounded rapidly after NaOH injection was terminated.

6.3 TRACER TEST RESULTS

The 2013 injection test utilized sodium continuously injected as NaOH as a tracer ion. Sodium was assumed to be conservative within the mine workings and was analyzed in samples collected from the 517 Shaft and from DR-3A.

Sodium concentrations were monitored at DR-3A before, during, and after injection (Figure 6-12). The sodium concentration at DR-3A first increased above pre-injection concentrations within three days after the start of NaOH injection, continued to increase while NaOH was being injected, and decreased after NaOH injection was terminated. The increase in sodium confirmed the hydraulic connection between the 517 Shaft and DR-3A.

The highest sodium concentration detected at DR-3A was 38 mg/L immediately before the end of NaOH injection (Figure 6-12). This is considerably lower than the highest sodium concentration of 424 mg/L detected in the 517 Shaft (Table 4-1). The peak sodium concentration at DR-3A was about 51% of the expected steady-state concentration of 75 mg/L,¹⁰ and numerical integration of the DR-3A sodium concentrations and flow rates

¹⁰ The expected steady-state sodium concentration of 75 mg/L was based on the NaOH injection rate (average of 0.16 gpm, or 0.25 pounds per minute of sodium), diluted into the time-weighted DR-3 flow rate of 468 gpm. A background sodium concentration 12.4 mg/L was used in these calculations.

indicates that 49% of the injected sodium exited the St. Louis Tunnel during the monitoring period.¹¹ These results indicate that half of the injected sodium was retained within the mine workings, either through reactions or storage. Sodium may have been lost due to limited mixing of the injected NaOH solution into the mine water, allowing the dense NaOH solution (specific gravity of about 1.27; Dow, 2010) to sink in the 517 Shaft water column. Some sodium may have been retained in other areas of the mine workings with stagnant flow conditions, and some sodium may also have sorbed to mineral surfaces within the mine workings, although this was likely to be a less significant retention mechanism.

The increase in sodium at DR-3A confirmed that mine water flows between the 517 Shaft and the St. Louis Tunnel discharge. However, because sodium did not approach equilibrium at DR-3A and because only half of the injected sodium was recovered, these results cannot be used to estimate the RTD of the mine workings between the 517 Shaft and DR-3A under the conditions of the 2013 injection test.

7.0 CONCLUSIONS AND RECOMMENDATIONS

The 2012 and 2013 injection tests evaluated chemical injection to the 517 Shaft as a method for reducing metals concentrations at the St. Louis Tunnel discharge. In the 517 Shaft, injection of alkaline solutions increased total alkalinity and pH and reduced metals concentrations. Additionally, metals concentrations discharging from the St. Louis Tunnel were decreased by up to 40% during the 2012 injection of K_2CO_3 and by as much as 26% during the 2013 injection of NaOH, although pH increases at DR-3A were minor. Most of the contaminant load in the 517 Shaft and within the SE Cross-cut was treated during both injection tests. Some of the contaminant load from the NW Cross-cut may have been treated during the 2012 test due to higher inputs of alkalinity (AMEC, 2013), but further reductions of loading at DR-3A would require delivery of alkaline solutions to other parts of the mine workings by injection at a different location or more effective delivery into the 517 Shaft. Tracer tests in 2012 and 2013 confirmed that a hydraulic connection exists between the 517 Shaft and the St. Louis Tunnel discharge.

During both tests, several factors limited the effectiveness of in-situ treatment. Alkalinity was consumed by neutralization within the mine workings and by precipitation of non-target metals (e.g., calcium and magnesium). Some of the dense alkaline solutions apparently sank in the 517 Shaft water column before mixing, as indicated by poor recovery of tracer ions in both tests. Alkaline solutions were injected deeper than intended in the 517 Shaft water column

¹¹ About 6,400 pounds of sodium were injected over 18 days; about 3,156 lbs of injected sodium exited the system within 87 days.

due to injection hose elongation. The 517 Shaft is a non-ideal injection location because of the large water volume below the injection point and the location of the shaft at the end of a short, upward-sloping drift approximately 150 feet off the main 500 level workings (AMEC, 2013). These factors reduced transport of the alkaline solution from the 517 Shaft to the SE Cross-cut and resulted in an insufficient dose to significantly affect waters from the NW Cross-cuts.

No further testing of in-situ chemical treatment is recommended at this time. If other water treatment alternatives that currently are being evaluated for the site do not provide sufficient treatment of the St. Louis Tunnel discharge, in-situ chemical precipitation potentially could be revisited. Future investigation and improvements to the injection approach potentially could include:

- Other injection location(s) could be considered for treating the SE Cross-cut. The 517 Shaft is accessible under current conditions but has limited flow due to its location on a drift off the SE Cross-cut. Because flows leaving the 517 Shaft are low in drought years, injection of carrier water would probably be required to effectively mix chemicals into the SE Cross-cut in dry years. The shaft also has a water column that extends for about 170 feet below the SE Cross-cut level, allowing some of the injected chemical to sink or treat non-target mine water below the injection point, regardless of injection depth. Direct injection into the SE Cross-cut would provide more efficient treatment of mine water, although this would likely require installation of a boring in the vicinity of the Argentine Shaft or other location above the SE Cross-cut (Figure 1-3).
- Other injection location(s) could be considered to treat water from the NW Cross-cut. Injection locations other than the 517 Shaft, such as unexplored areas north of the St. Louis Tunnel, could be evaluated to avoid neutralization of injected chemicals during transport through the 517 Shaft and SE Cross-cut and to more directly treat flow in the NW Cross-cut.
- Injection and tracer testing could be conducted for a longer duration to allow the system to approach steady-state conditions. Longer-term testing would allow evaluation of this treatment approach under different seasonal conditions and could provide better geochemical and hydraulic characterization of the system. Additional testing would generate information that would allow prediction of effluent concentrations and sludge production, while allowing a determination of the sustainability of this approach.
- Other chemical injection strategies could be considered. Although continuous injection of K_2CO_3 and NaOH solutions increased pH and alkalinity and decreased metals concentrations, continuous injection is relatively expensive and logistically challenging. Periodic dosing with a solid alkalinity source (e.g., Na_2CO_3 briquettes) could be considered as a less expensive and relatively low maintenance method for implementing in-situ chemical precipitation, particularly if the alkalinity source

could be placed directly into one of the cross-cuts. This method could be implemented periodically during periods of peak metals discharge (i.e., high flow and/or high metals concentrations), or potentially as seasonal batch treatment.

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TABLES

TABLE 3-1
2012 INJECTION TEST TIMELINE OF ACTIVITIES
Rico-Argentine Mine Site
Dolores County, Colorado

Date	Time	Event
9/4/2012	--	Colog performed initial visual logging of the 517 Shaft and water column and logged a vertical profile of water quality parameters.
9/5/2012	--	Colog performed 517 Shaft characterization activities, including depth verification, temperature and conductivity profiles, vertical flow measurements, and baseline water sampling. Water samples were collected from the 517 Shaft at 455 feet and 495 feet below the shaft collar, from the Blaine Tunnel in by the coffer dam, and from DR-3. Rain for Rent delivered two K_2CO_3 storage tanks, and equipment staging and piping assembly commenced.
9/6/2012	--	Colog performed video logging of 517 Shaft. CDRMS personnel cut a hole in the Argentine Shaft J-vent, which allowed Colog to lower a camera into the J-vent. However, debris in the J-vent prevented advancement of the camera. CDRMS personnel began pumping water from within the Blaine Tunnel and discharge it down the 517 Shaft, temporarily draining the flooded area in-by the coffer dam to begin rehabilitation activities. Approximately 12,000 gallons were transferred on this day. Pumps were run for only a few hours each day.
9/7/2012	--	The first delivery (approximately 3,800 gallons) of 47% K_2CO_3 arrived to the site and was transferred to storage tank TK-01. The pooled mine-water in-by the Blaine Tunnel cofferdam recharged overnight, so CDRMS pumped Blaine Tunnel water into the 517 Shaft, removing an estimated 2,200 gallons (14,200 gallons to date).
9/8/2012	--	CDRMS continued to pump Blaine Tunnel water into the 517 Shaft, removing an estimated 6,600 gallons.
9/9/2012	--	CDRMS continued to pump Blaine Tunnel water into the 517 Shaft, removing an estimated 4,400 gallons.
9/10/2012	--	CDRMS continued to pump Blaine Tunnel water into the 517 Shaft, removing an estimated 2,200 gallons.
9/11/2012	--	CDRMS continued to pump Blaine Tunnel water into the 517 Shaft, removing an estimated 2,200 gallons.
9/12/2012	--	CDRMS continued to pump Blaine Tunnel water into the 517 Shaft, removing an estimated 2,200 gallons. The first injection system piping wet test was performed.
9/13/2012	--	Constructed the Silver Creek sandbag dam. Performed injection system wet testing. Pumped water from Silver Creek into storage tank TK-02 and recirculated TK-02 using a transfer pump. Set up autosamplers at DR-3A.
9/19/2012	--	CDRMS continued to pump Blaine Tunnel water into the 517 Shaft, removing an estimated 10,450 gallons.
9/20/2012	--	CDRMS continued to pump Blaine Tunnel water into the 517 Shaft, removing an estimated 2,200 gallons.
9/21/2012	--	CDRMS continued to pump Blaine Tunnel water into the 517 Shaft, removing an estimated 2,200 gallons. LiCl delivered to the site.
9/22/2012	--	CDRMS continued to pump Blaine Tunnel water into the 517 Shaft, removing an estimated 2,200 gallons. Prepared the first batch of K_2CO_3 injectate by transferring 47% K_2CO_3 from TK-01 to TK-02, which already contained approximately 3,600 gallons of Silver Creek water.
9/23/2012	--	CDRMS finished pumping Blaine Tunnel water into the 517 Shaft, removing an estimated 2,200 gallons.
9/24/2012	--	Added 180 pounds of LiCl to the first batch of injectate in TK-02. Started and successfully tested injection pump operation; constructed downhole injection hose assembly.

TABLE 3-1
2012 INJECTION TEST TIMELINE OF ACTIVITIES
Rico-Argentine Mine Site
Dolores County, Colorado

Date	Time	Event
9/26/2012	--	Added 70 pounds of LiCl to the first batch of injectate in TK-02 (total of 250 pounds of LiCl added).
		The second delivery (approximately 3,500 gallons) of 47% K ₂ CO ₃ arrived to the site and was transferred to storage tank TK-01.
		Collected baseline (pre-injection) samples from DR-3A, the 517 Shaft, and Silver Creek.
		Injected 14 gallons of NaBr solution over 8.75 minutes, followed by approximately 15 gallons of chase water from Silver Creek water.
	14:48	Started injection of K ₂ CO ₃ from TK-02 (0.3 gpm). In-tunnel U.S. EPA support personnel confirmed flow of water through injection hose.
10/4/2012	--	Began preparing the second batch of K ₂ CO ₃ injectate by transferring 47% K ₂ CO ₃ from TK-01 to TK-03 and pumping Silver Creek water directly into TK-03.
10/6/2012	--	Completed preparing the second injectate batch.
10/9/2012	10:35	Completed injection from TK-02 and began injecting from TK-03 (0.3 gpm).
10/15/2012	--	The third delivery (approximately 3,800 gallons) of 47% K ₂ CO ₃ arrived to the site and was transferred to storage tank TK-01.
10/16/2012	11:30	The injection pump VFD faulted and shut off injection. Observed a pH decrease in the 517 Shaft from approximately pH 10 to pH 7.5 during the upset.
	14:20	Restarted the VFD and injection pump (0.3 gpm).
	--	Began preparing the third batch of K ₂ CO ₃ injectate by transferring 47% K ₂ CO ₃ from TK-01 to TK-02 and pumping Silver Creek water directly into TK-02.
	--	Completed preparing the third injectate batch.
10/17/2012	10:20	Shut off the VFD and injection pump.
	14:30	Began pumping Silver Creek carrier water into the 517 Shaft (approximately 25 gpm).
	15:00	Restarted the VFD and began injecting K ₂ CO ₃ (0.3 gpm), concurrent to carrier water.
10/23/2012	17:30	Completed injection from TK-03 and began injecting from TK-02 (approximately 0.3 gpm).
10/24/2012	10:00	Doubled K ₂ CO ₃ injection rate to approximately 0.6 gpm.
10/25/2012	--	Conducted a vertical profile of water quality parameters in the 517 Shaft.
10/26/2012	--	Began preparing the fourth batch of K ₂ CO ₃ injectate by transferring 47% K ₂ CO ₃ from TK-01 to TK-03 and pumping Silver Creek water directly into TK-03.
10/29/2012	--	Temporarily shut off the VFD and injection pump for generator maintenance.
	--	Continued preparing the fourth injectate batch.
10/30/2012	--	Temporarily shut off the VFD and injection pump for injectate batching.
10/31/2012	--	Collected water samples and conducted a vertical profile of water quality parameters in the 517 Shaft.
	--	Completed preparing the fourth injectate batch.
11/1/2012	17:45	Received two 55-gallon drums and later began injection of 25% NaOH at approximately 0.038 gpm (100 mL/min) into the Silver Creek water carrier system.
	--	Checked Troll deployed in 517 Shaft for ice buildup. Probe and cable were not icing, so probe was redeployed.
11/2/2012	--	Received three 55-gallon drums of NaOH on site.
11/4/2012	15:00	Increased NaOH injection rate to approximately 200 mL/min.
11/6/2012	--	Received two 55-gal drums of NaOH on site.
11/7/2012	14:46	Shut off the VFD and NaOH injection pump to facilitate 517 Shaft sample collection and depth to water measurements.
	16:22	Turned on the VFD and resumed NaOH injection.
	17:00	Completed NaOH injection, injecting a total of approximately 330 gallons of solution.
	--	VFD reduced from 17.6 Hz to 4 Hz to reduce K ₂ CO ₃ injection rate.
11/8/2012	--	Completed K ₂ CO ₃ injection. Discontinued pumping carrier water from Silver Creek.
	--	Began decontamination and demobilization of NaOH and K ₂ CO ₃ solutions. Removed the K ₂ CO ₃ injection hose from the 517 Shaft Access Tunnel.

TABLE 3-1
2012 INJECTION TEST TIMELINE OF ACTIVITIES
 Rico-Argentine Mine Site
 Dolores County, Colorado

Date	Time	Event
11/9/2012	—	Finished essential demobilization.
11/14/2012	—	Finished sampling and monitoring.
11/15/2012	—	Winterized the 517 Shaft by moving injection piping and closing the air door.

Abbreviations:

CDRMS = Colorado Division of Reclamation, Mining and Safety

Colog = International Directional Services, LLC - Colog Group

DR-3 = St. Louis Tunnel discharge monitoring location

gpm = gallon per minute

Hz = Hertz

K₂CO₃ = potassium carbonate

LiCl = lithium chloride

mL/min = milliliter per minute

NaOH = sodium hydroxide

VFD = variable frequency drive

TABLE 4-1
SELECTED ANALYTICAL AND FIELD MONITORING RESULTS, 517 SHAFT NEAR WATER SURFACE SAMPLES
Rico-Argentine Mine Site
Dolores County, Colorado

Parameter		2012 Injection Test				2013 Injection Test				
		Baseline		End of Injection	Final 517 Shaft Sample	Baseline/Pre-Injection			End of Injection	Final 517 Shaft Sample
Parameter	Units	9/5/2012	9/26/2012	11/7/2012	11/14/2012	4/30/2013	5/16/2013	6/19/2013	7/9/2013	8/21/2013
Laboratory Analytical Results										
Alkalinity, Total	mg/L as CaCO ₃	23.7	29.9	3,080	211	224	215	252	978	330
Bromide	mg/L	<1.0	0.14J	0.95J	0.28J	<1.0	0.67 J	<1.0	0.94 J	<1.0
Cadmium, Total	µg/L	83.6	68.8	3.0J	17.9	15	12.6	9.4	2.3	4.7
Cadmium, Dissolved	µg/L	84.3	73.2	ND	17	14.9	11.1	9.6	<0.50	3.1
Calcium, Total	µg/L	327,000	290,000	31,600	185,000	279,000	276,000	312,000	44,500	172,000
Calcium, Dissolved	µg/L	336,000	285,000	2,640	195,000	291,000	294,000	314,000	3,450	160,000
Chloride	mg/L	< 1.0	< 1.0	4.7	1.1	0.92 J	1.0	1.5	1.3	1.2
Iron, Total	µg/L	5,300	2,190	932	460	725	2,430	719	780	4650
Iron, Dissolved	µg/L	648	668	< 250	< 50	27.2 J	<50.0	11.8 J	19.7 J	148
Lithium, Total	µg/L	30.6	NA	NA	NA	42.2	36.6	32.8	14.6	28.8
Lithium, Dissolved	µg/L	31.2	32.6	71.8	58.1	44.1	34.2	26.6	13.8	28.2
Magnesium, Total	µg/L	30,800	25,600	9,600	24,000	21,600	21,800	26,300	10,100	15,900
Magnesium, Dissolved	µg/L	32,200	25,400	8,240	24,000	22,300	22,800	25,300	547	15,600
Manganese, Total	µg/L	4,810	4,660	232	2,170	1,540	1,580	1,170	148	2,210
Manganese, Dissolved	µg/L	5,010	4,520	<10	2,160	1,580	1,390	1,210	0.96 J	1,600
Potassium, Total	µg/L	1,590	1,710	2,440,000	308,000	97,500	54,600	24,900	41,900	54,900
Potassium, Dissolved	µg/L	1,600	1,740	2,470,000	296,000	99,100	55,800	24,100	41,300	54,900
Sodium, Total	µg/L	9,210	9,880	210,000	22,700	11,000	10,400	9,230	424,000	67,100
Sodium, Dissolved	µg/L	9,440	9,840	211,000	21,700	11,200	10,700	9,300	418,000	66,900
Sulfate	mg/L	506	949	623	859	1,020	701	664	39.1	341
Zinc, Total	µg/L	15,200	12,600	708	3,210	3,680	2,830	2,990	577	1,660
Zinc, Dissolved	µg/L	15,900	11,900	< 100	2,940	3,600	2,800	2,950	<50.0	1,190
Field Water Quality Parameters										
pH	s.u.	6.12	6.03	11.26	7.67	6.92	6.87	6.88	12.0	7.11
Temperature	°C	19.3	11.95	10.58	11.69	12.28	10.08	14.2	10.8	11.95
Conductivity	µS/cm	1,734	1,219*	5,799*	1,497*	1,653	1,588	1,516	3,150	1,236
Dissolved Oxygen	mg/L	4.15	7.26	8.42	6.65	4.87	5.34	4.75	NA	5.16
ORP	mV	77.1	80.9	78.2	147.2	250.2	173.4	201.9	253	114.3

Notes/Abbreviations

* = reported conductivity result is electrical conductivity, rather than specific conductivity

°C = degrees Celsius

CaCO₃ = calcium carbonate

J = result is above method detection limit, but below reporting limit

mg/L = milligrams per liter

mV = millivolts

NA = not analyzed

ND = not detected

ORP = Oxidation reduction potential

s.u. = standard pH units

µg/L = micrograms per liter

µS/cm = microSiemens per centimeter

TABLE 4-2
SELECTED ANALYTICAL AND FIELD MONITORING RESULTS
DR-3A SAMPLES
Rico-Argentine Mine Site
Dolores County, Colorado

Parameter	Units	2012 Injection Test				2013 Injection Test		
		Baseline	End of Injection	End of Monitoring		Baseline	End of Injection	End of Monitoring
		9/5/2012	9/26/2012	11/7/2012	11/14/2012	6/19/2013	7/10/2013	9/16/2013
Laboratory Analytical Results								
Alkalinity, Total	mg/L as CaCO ₃	97.4	90.2	104	107	91.2	103	88.7
Bromide	mg/L	<1	0.15J	0.31J (a)	1.1	<1	<1	<1
Cadmium, Total	µg/L	20.4	22.4	14.3	15.7 (c)	23.4	19.8	26.4
Cadmium, Dissolved	µg/L	19.5	21.7	13.7	14.8 (c)	20.8	18.6	25.2
Calcium, Total	µg/L	251,000	224,000	223,000 (a)	239,000 (b)	245,000	238,000	246,000
Calcium, Dissolved	µg/L	247,000	225,000	226,000 (a)	245,000 (b)	229,000	234,000	253,000
Chloride	mg/L	<1.0	<1	0.99J (a)	1.1	0.77J	0.68J	0.93J
Iron, Total	µg/L	3,350	3,750	3,780	5,390	8,490	4,030	4,610
Iron, Dissolved	µg/L	349	1,020	90.8J	142	1,790	<50	1,100
Lithium, Total	µg/L	26	NA	NA	NA	29.4	24.6	28.5
Lithium, Dissolved	µg/L	26.8	29.1	70.5 (a)	39.8 (b)	21.4	24.3	29.7
Magnesium, Total	µg/L	20100	18,700	19,200 (a)	19,600 (b)	20,300	20,000	21,000
Magnesium, Dissolved	µg/L	20300	19,000	19,700 (a)	20,300 (b)	18,200	20,500	18,100
Manganese, Total	µg/L	1,970	2,160	1,740	1,810	1,840	1,820	1,980
Manganese, Dissolved	µg/L	1,970	2,110	1,760	1,790	1,760	1,860	1,950
Potassium, Total	µg/L	1,600	1,720	31,700	25,300	4,010	4,050	4,120
Potassium, Dissolved	µg/L	1,630	1,770	46,100 (a)	22,900 (b)	3,360	4,060	4,250
Sodium, Total	µg/L	10,900	11,500	11,200 (a)	11,100 (b)	12,400	25,800	16,100
Sodium, Dissolved	µg/L	11,000	11,700	11,800 (a)	12,100 (b)	11,100	26,000	16,500
Sulfate	mg/L	622	615	651 (a)	662 (b)	653	719	601
Zinc, Total	µg/L	4,080	4,320	2,900	2,690	4,340	3,780	4,710
Zinc, Dissolved	µg/L	3,890	4,060	2,790	2,470	3,610	3,420	4,640
Field Water Quality Parameters								
pH	standard units	6.92	6.58	7.03	6.81	6.85	6.87	6.70
Temperature	°C	18.41	19.1	18.51	19.16	19.72	19.61	19.58
Conductivity	µS/cm	1,332	1050.26*	1,304	1,283	1,302	1,272	1,288
Dissolved Oxygen	mg/L	2.58	4.35	5.53	5.67	4.06	4.13	3.88
ORP	mV	95	-3.8	47	73	123.0	95.9	55.7

Notes:

- (a) Sample collected on November 4, 2012, about three days before injections ended.
(b) Sample collected on November 11, 2012, about three days before monitoring ended.
(c) Sample collected November 12, 2012, about two days before monitoring ended.

Abbreviations:

* = reported conductivity result is electrical conductivity, rather than specific conductivity
°C = degree Celsius
CaCO₃ = calcium carbonate
J = result is above method detection limit, but below reporting limit
mg/L = milligram per liter

mV = millivolt
NA = not analyzed
ORP = oxidation reduction potential
µg/L = microgram per liter
µS/cm = microSiemen per centimeter

TABLE 4-3
SUMMARY OF TRACER TEST RESULTS
 Rico-Argentine Mine Site
 Dolores County, Colorado

Tracer	Flow at DR-3 (gpm)	Mean HRT (days)	Variance σ^2 (days ²)
Lithium (2011)	772	9.3	110.5
Lithium (2012)	612	10.8	26.3
Potassium (2012)	612	11.0	25.5

Notes:

Lithium (2011) results are derived from data presented by URS (2012).

Abbreviations:

ft³ = cubic feet

gpm = gallons per minute

HRT = hydraulic residence time

TABLE 5-1
2013 Injection Test Timeline of Activities
Rico-Argentine Mine Site
Dolores County, Colorado

Date	Time	Event
4/30/2013	-	U.S. EPA entered the 517 Shaft Access Tunnel to assess access. No ice obstructions were observed, indicating that the air doors installed provided an adequate thermal barrier and restricted the air flow into the portal, thereby minimizing ice formation. Collected a water sample from the 517 Shaft for laboratory analysis for metals and anions.
5/13/2013	-	Performed downhole video surveillance of the upper (above water) and lower (below water) sections of the 517 Shaft.
5/14/2013	-	Deployed Mount Sopris Instrument to measure water quality parameters. Each run started at approximately four feet below the 517 Shaft water surface. Two discrete runs were completed to terminal depths of approximately 630 feet.
5/15/2013	-	Collected 517 Shaft vertical and horizontal flow measurements using a CDFM and colloidal borescope, respectively, attached to a wireline.
5/16/2013	-	Performed water sampling from discrete depths within the 517 Shaft.
5/17/2013	-	Performed water sampling from discrete depths within the 517 Shaft.
6/11/2013	-	Commenced 517 Injection Test electrical and conveyance installation.
6/17/2013	-	Sonar deployed in 517 Shaft as part of 517 Shaft Geophysical Characterization work.
6/18/2013	-	Chemical tank delivered to site. Sonar deployed in the 517 Shaft as part of 517 Shaft Geophysical Characterization work.
6/20/2013	-	Complete 517 Injection Test electrical and conveyance installation. Approximately 4,500 gallons of 25% NaOH was delivered to the site and transferred to TK-01.
6/21/2013	11:52	Injection of NaOH started at about 600 mL/min.
6/27/2013	13:10	Started injection of Silver Creek carrier water.
	18:00	Primary generator shutdown; backup turned on. VFD fault prevented injection pump from restarting.
6/28/2013	9:30	Injection pump restarted. Operating system on backup generator until primary generator can be serviced.
7/1/2013	10:10	Shutdown generators to service and troubleshoot. Pumping stopped.
	13:35	Injection pump restarted. Operating system on backup generator until primary generator servicing completed.
	15:00	Shutdown generators to connect all electrical wiring.
	15:23	Injection pump restarted.
7/2/2013	5:45	Primary generator shutdown; backup turned on. VFD fault prevented injection pump from restarting.
	10:38	Restarted NaOH feed using back-up generator.
7/3/2013	10:52	Shutdown NaOH feed for chemical delivery.
	15:34	Restarted NaOH feed using back-up generator.
7/8/2013	10:33	Injection was stopped for approximately 5 minutes to clean Silver Creek carrier water Y-strainer and reset carrier water flow rate to approximately 25 gpm.
7/9/2013	-	Injection test was terminated due to potential concerns with inadequate mixing down the 517 Shaft.
8/21/2013	-	In-tunnel support staff collected final sample from the 517 Shaft from a depth of 465 feet.
8/22/2013	-	Sonde removed from the tunnel.
9/16/2013	16:00	Final samples collected from DR-3A. End of monitoring.

Abbreviations:

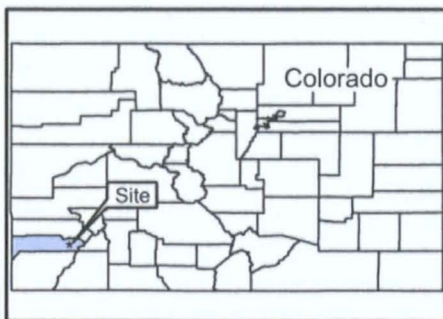
% = percent
AECI = Anderson Engineering Company, Inc.
AVV = air vacuum valve
CDFM = corehole dynamic flowmeter
gpm = gallon per minute
mL/min = milliliter per minute
NaOH = sodium hydroxide
TK-01 = Tank 1 (chemical storage tank)
U.S. EPA = United States Environmental Protection Agency
VFD = variable frequency drive

FIGURES

P:\Project\160000s\SA11161300 - Rico-Argentine Mine Site\14000_CAD\Injection Test WP\SiteLocMap.mxd



National Geographic, Esri, DeLorme, NAVTEQ, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, IPC



0 2.5 5 10 15 20 Miles

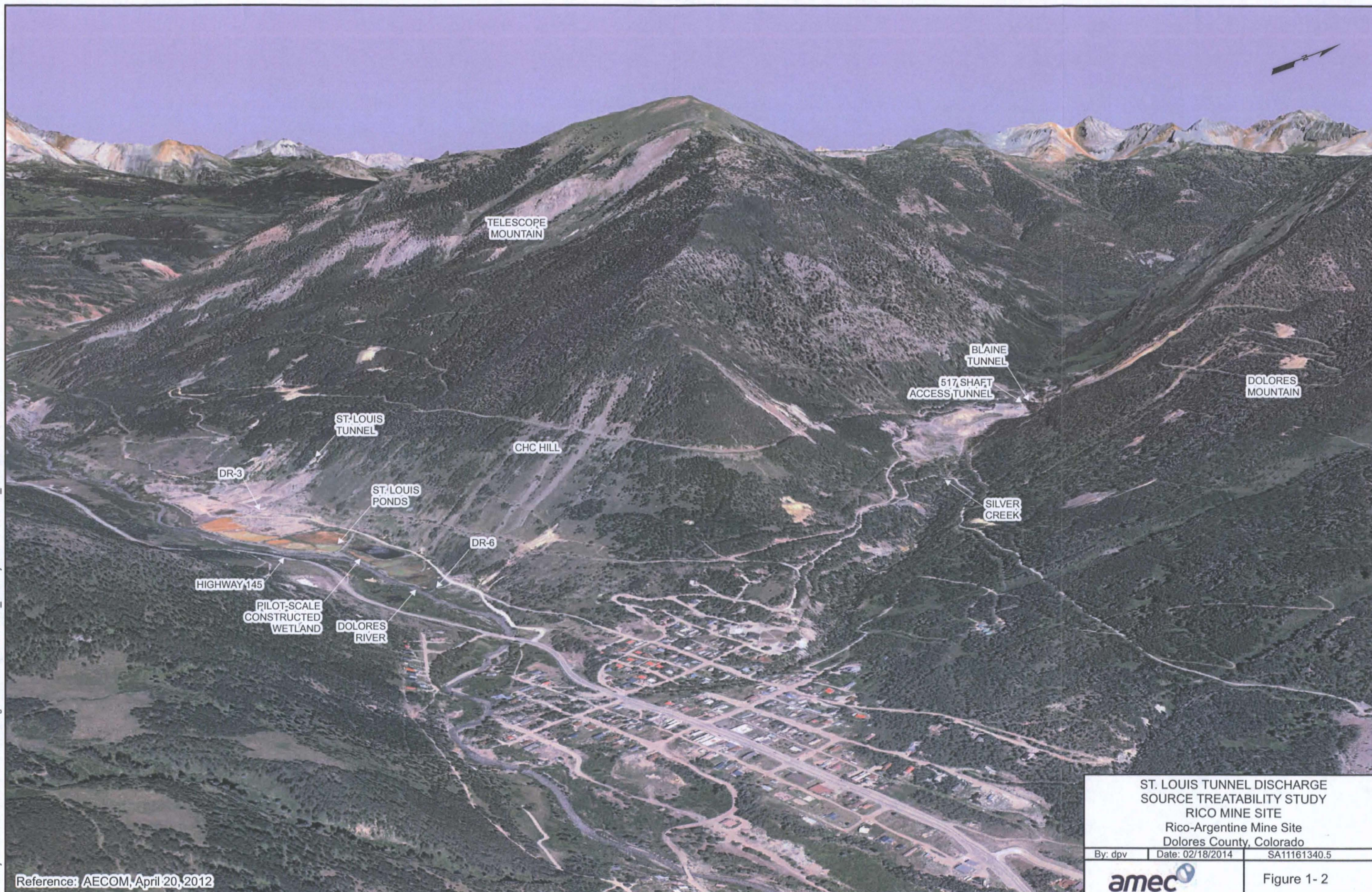
SITE LOCATION MAP
Rico-Argentine Mine Site
Dolores County, Colorado

By: dpv Date: 02/18/2014 Project No. SA11161340.5



Figure 1-1

P:\Project\160000\SA11161300 - Rico-Argentine Mine Site\14000_CAD\Injection Test WP12_Rico Mine Site.mxd



ST. LOUIS TUNNEL DISCHARGE
SOURCE TREATABILITY STUDY
RICO MINE SITE
Rico-Argentine Mine Site
Dolores County, Colorado

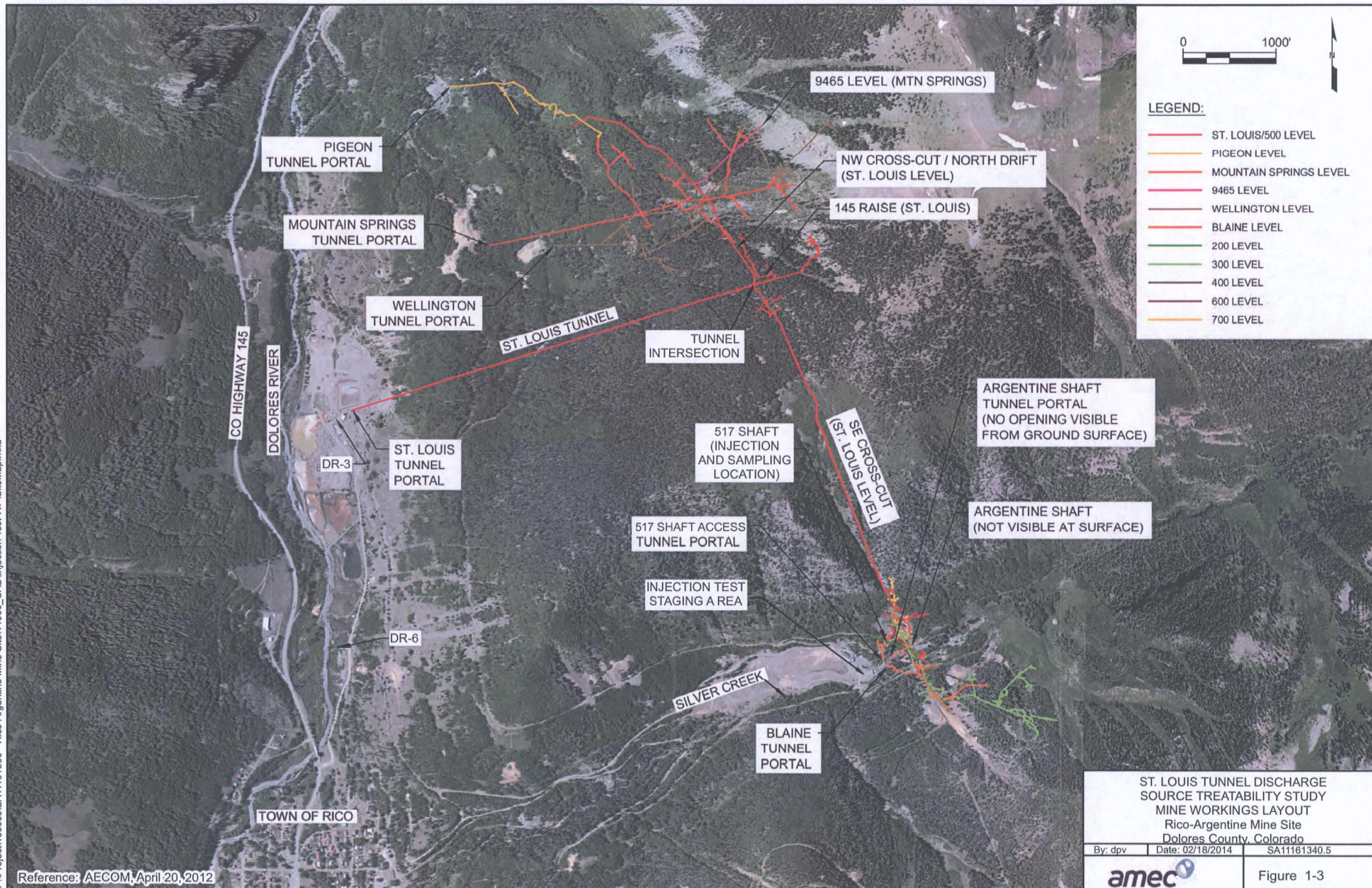
By: dpv Date: 02/18/2014 SA11161340.5



Figure 1- 2

Reference: AECOM, April 20, 2012

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Reference: AECOM, April 20, 2012

Plot Date: 03/26/14 - 10:28am, Plotted by: donna.valasek
Drawing Path: P:\Project\16000s\SA11161300 - Rico-Argentine Mine Site\14000_CAD\Injection Test WPI, Drawing Name: P&ID.dwg

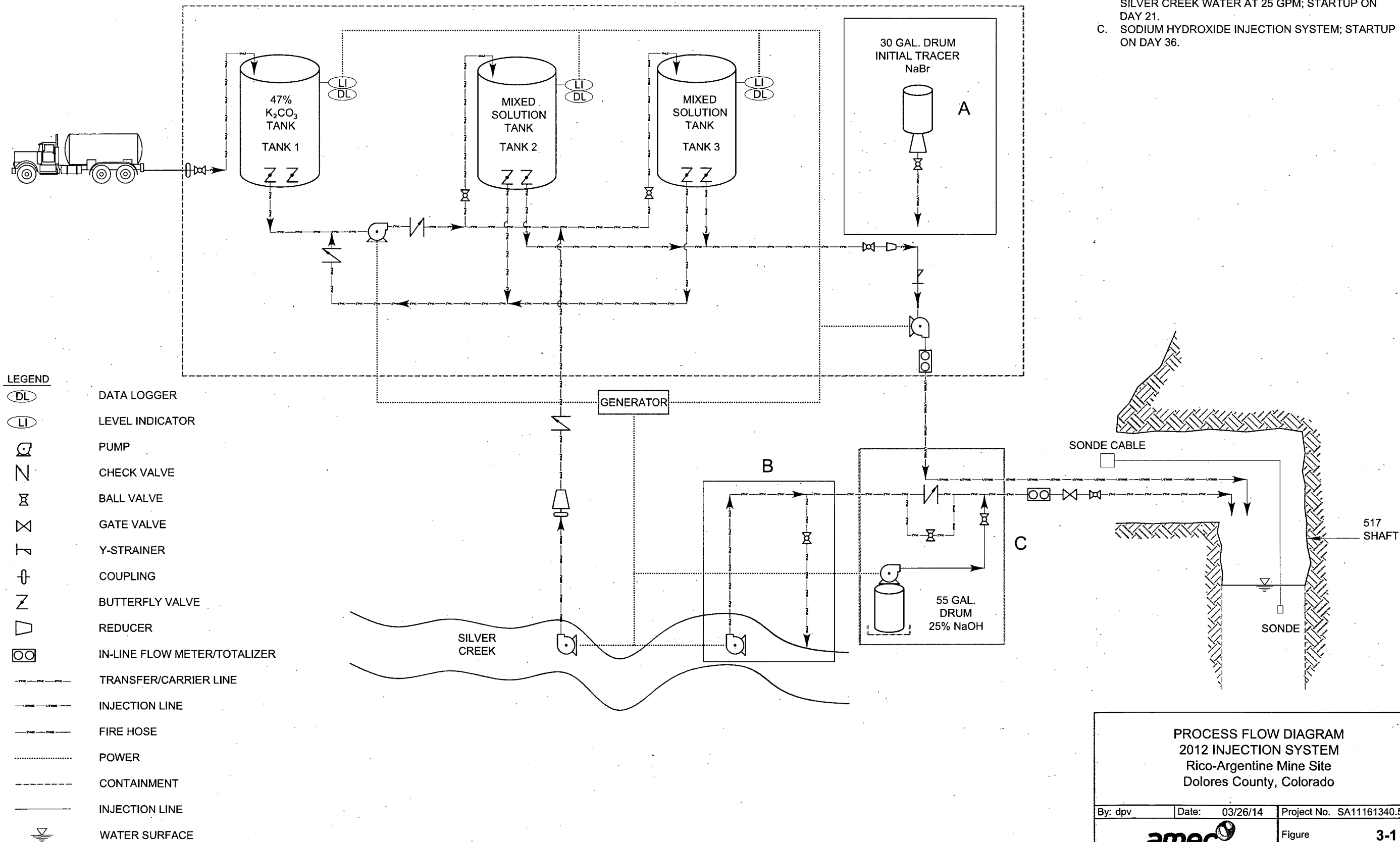


FIGURE 3-2
2012 INJECTION TEST FLOW RATES
 Rico-Argetine Mine Site
 Dolores County, Colorado

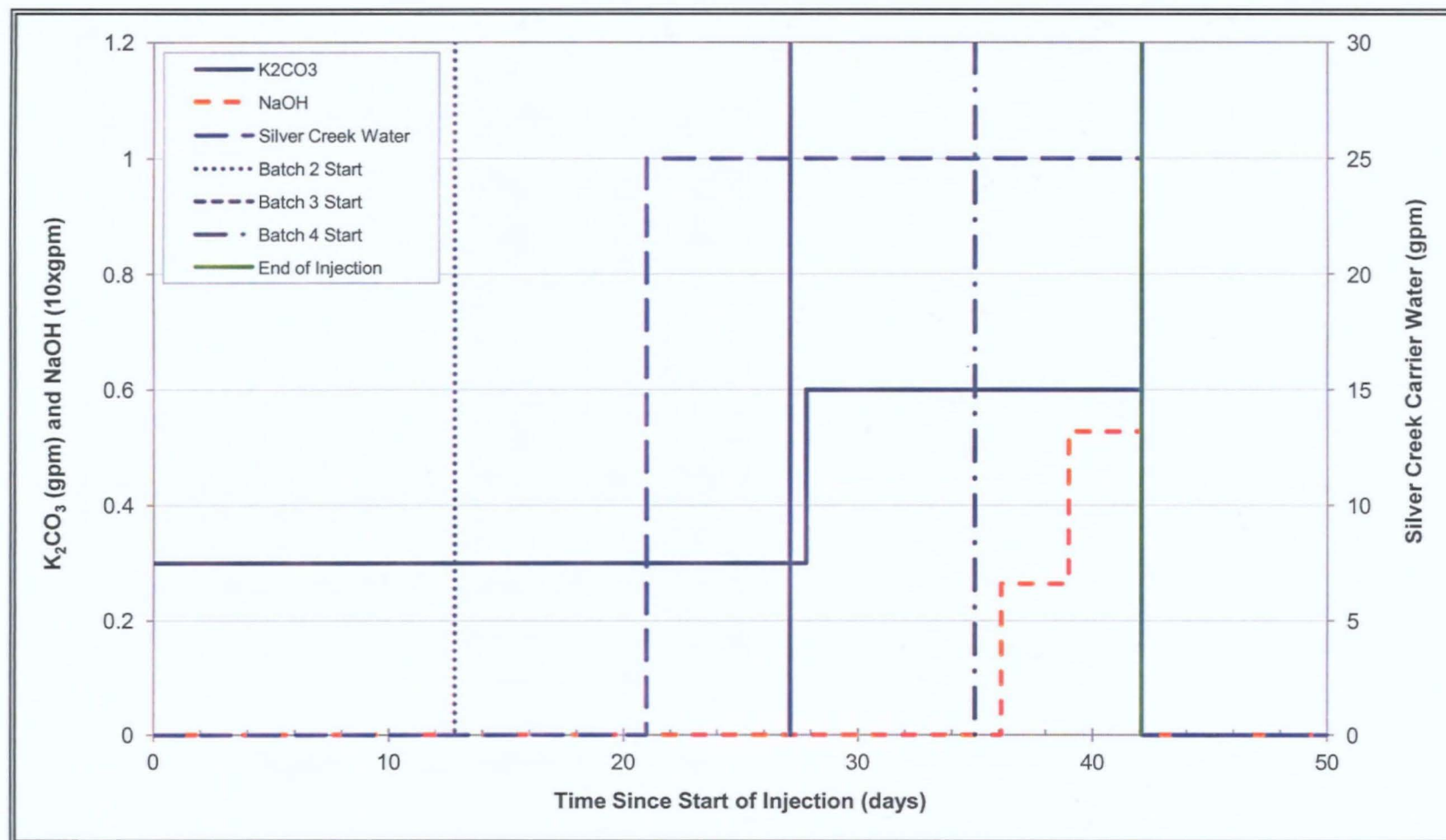


FIGURE 4-1
WATER QUALITY PARAMETERS
517 SHAFT - 2012 INJECTION TEST
 Rico-Argetine Mine Site
 Dolores County, Colorado

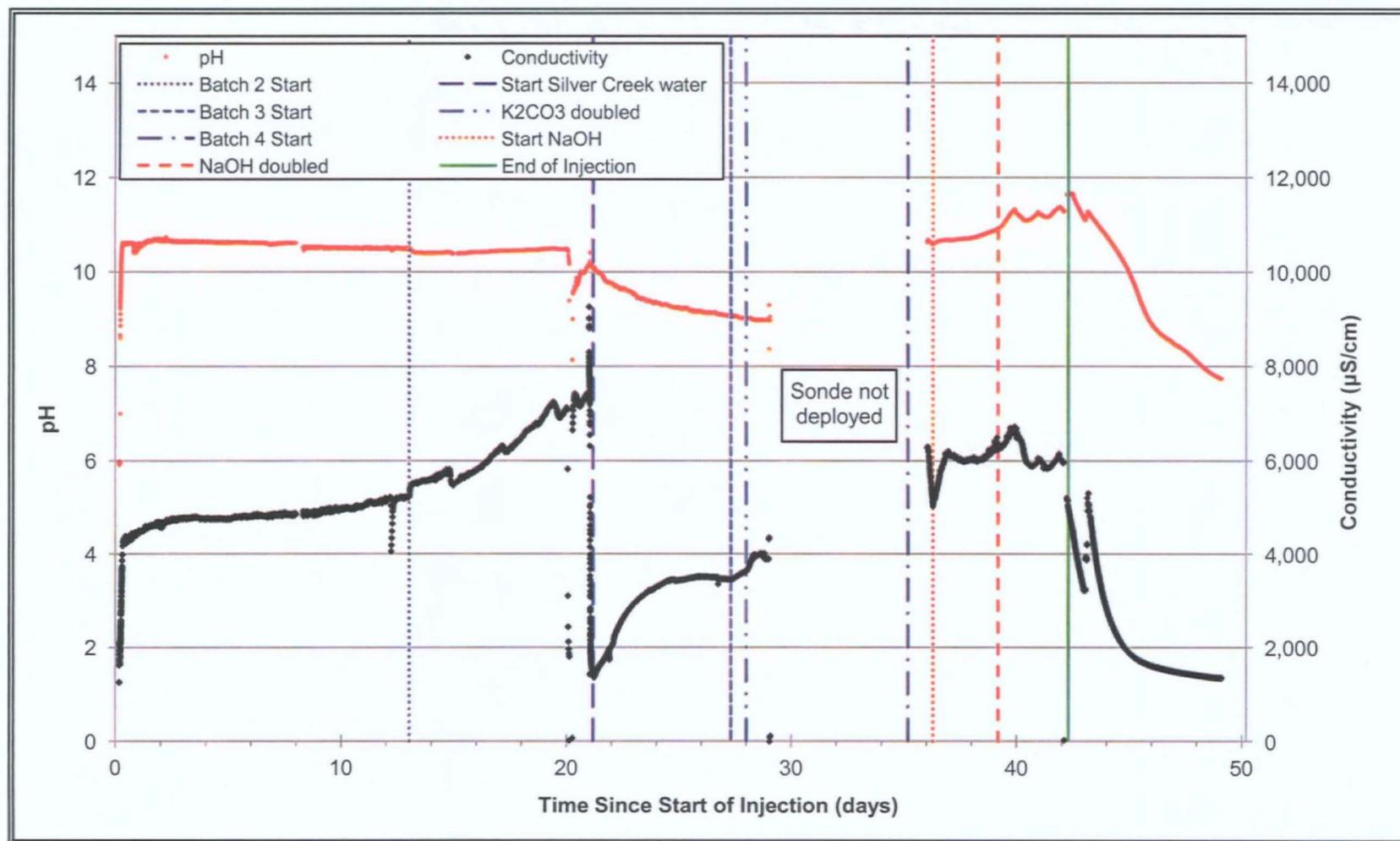


FIGURE 4-2
DETAIL OF WATER QUALITY PARAMETERS
517 SHAFT - 2012 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

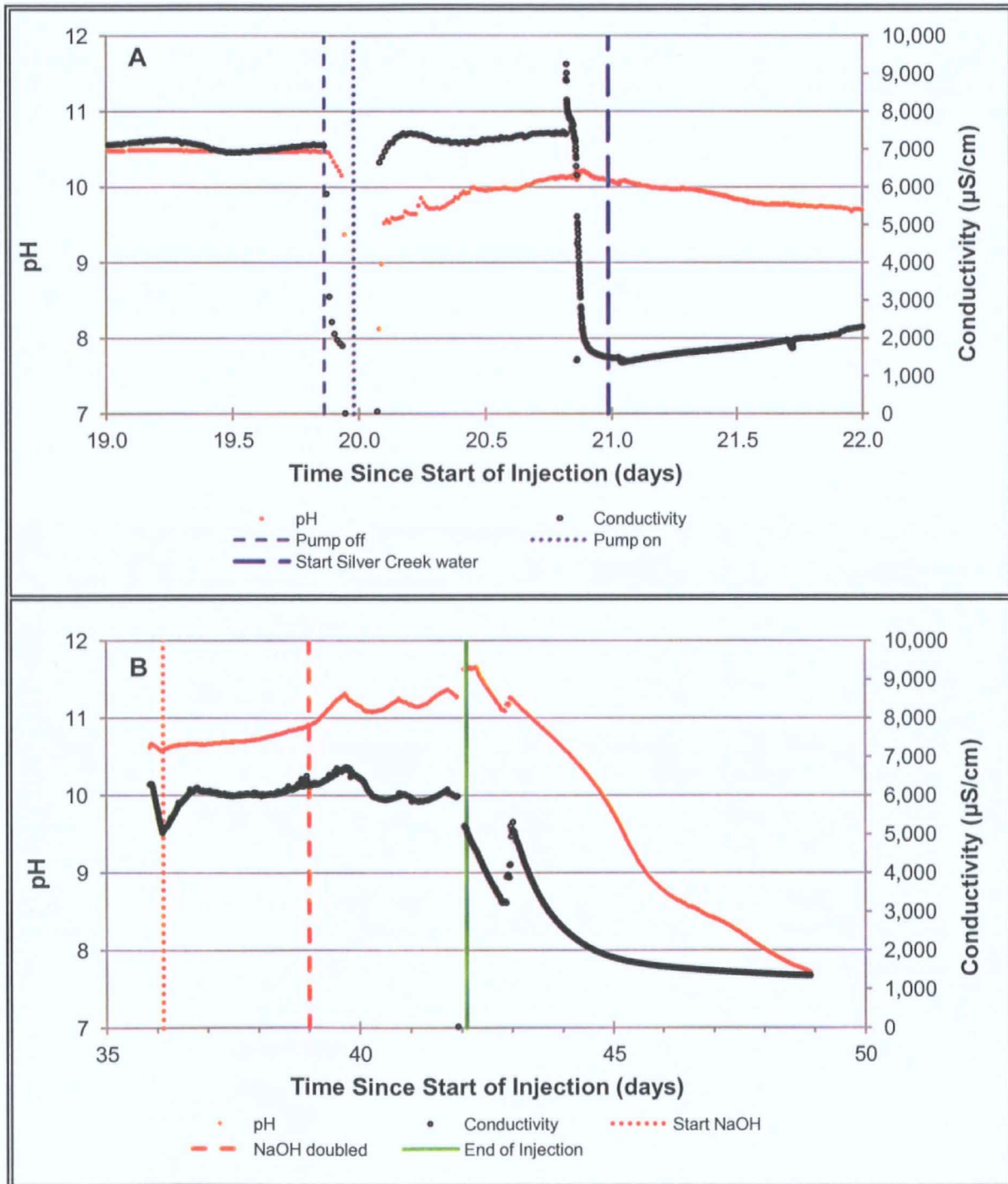
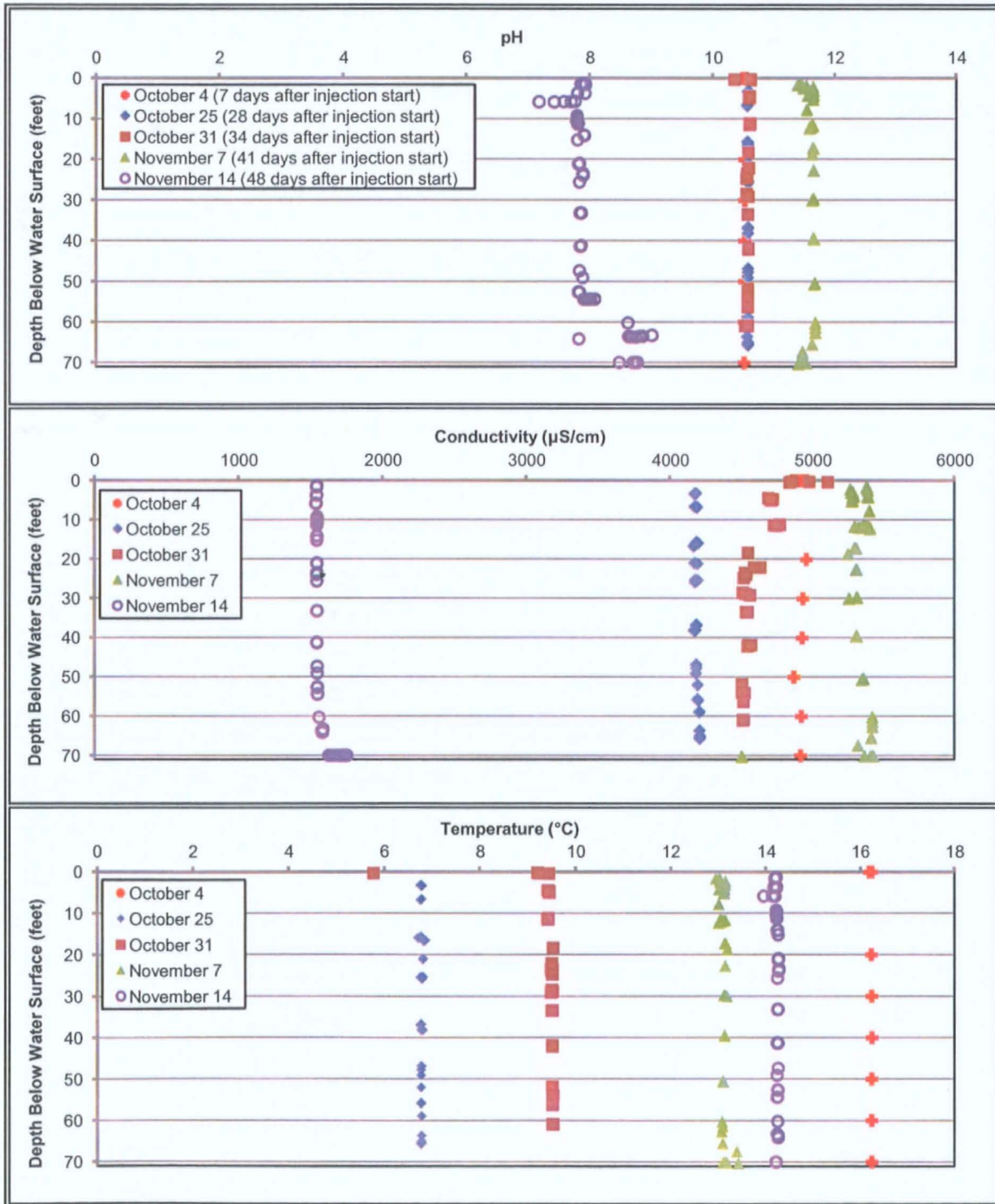


FIGURE 4-3
VERTICAL PROFILES OF WATER QUALITY PARAMETERS IN THE 517 SHAFT
2012 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado



AMEC Environment & Infrastructure, Inc.

Page 1 of 1

FIGURE 4-4
ALKALINITY AND SULFATE CONCENTRATIONS IN THE 517 SHAFT
2012 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

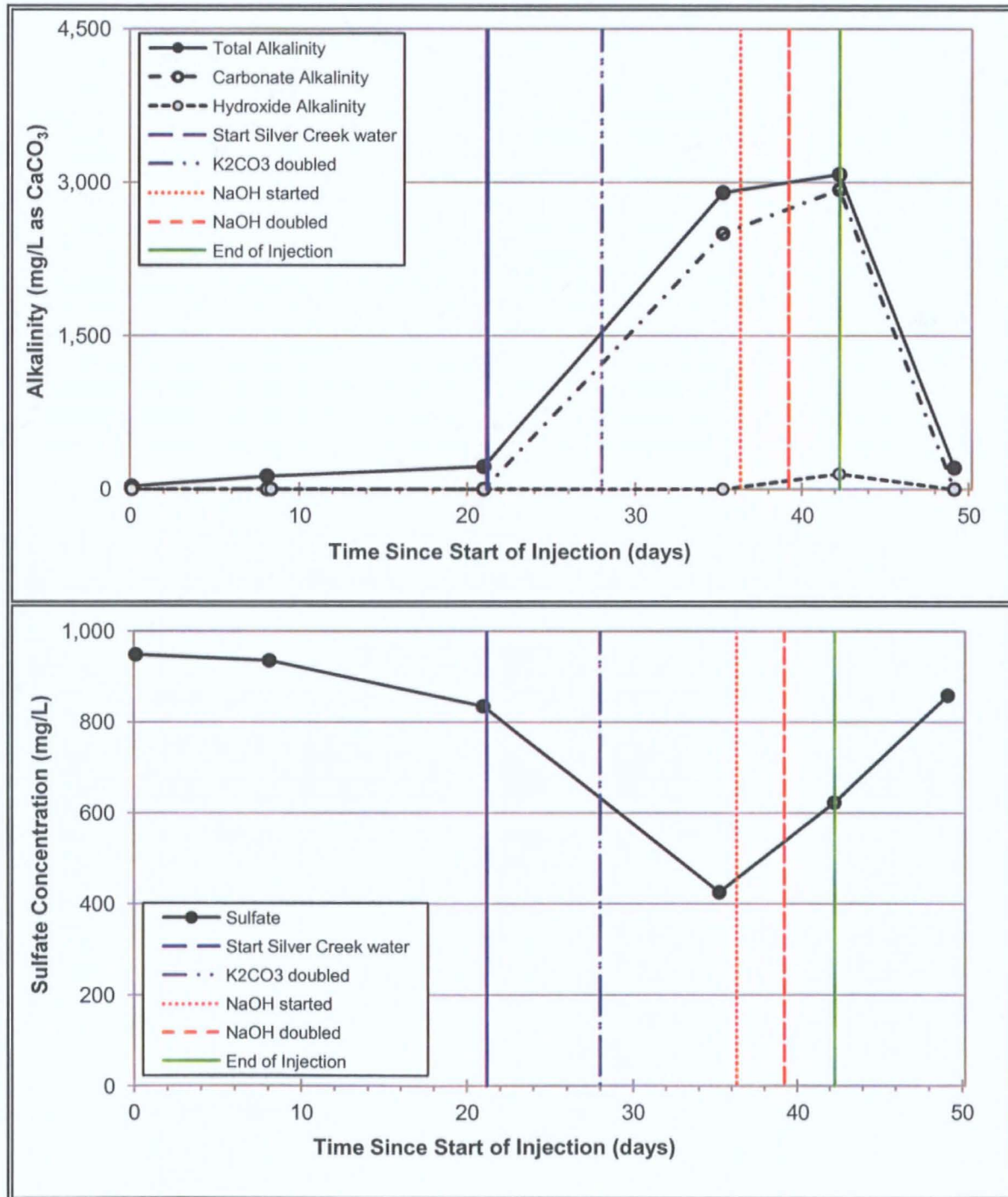


FIGURE 4-5
CALCIUM AND MAGNESIUM CONCENTRATIONS IN THE 517 SHAFT
2012 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

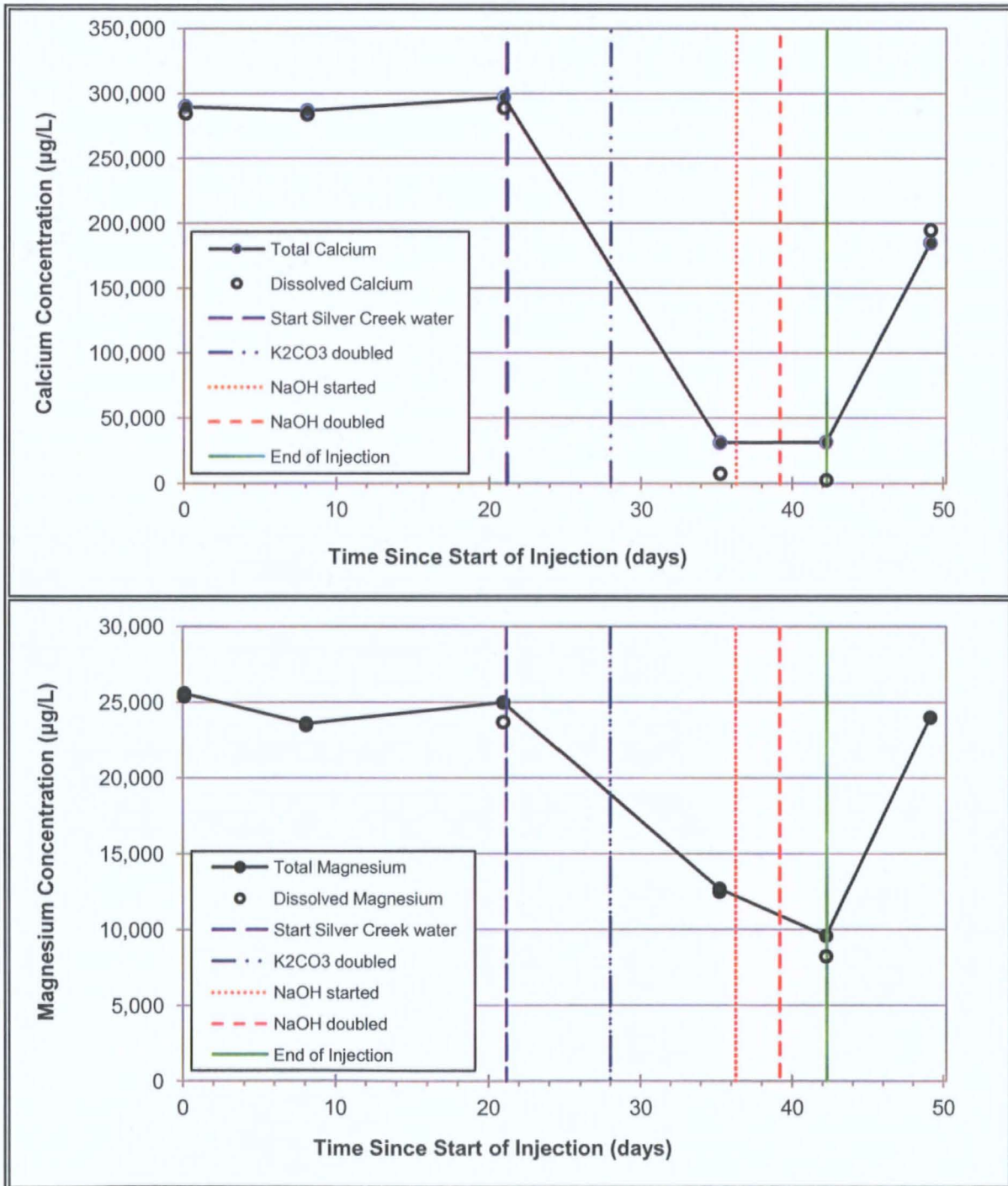


FIGURE 4-6
ZINC AND CADMIUM CONCENTRATIONS IN THE 517 SHAFT
2012 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

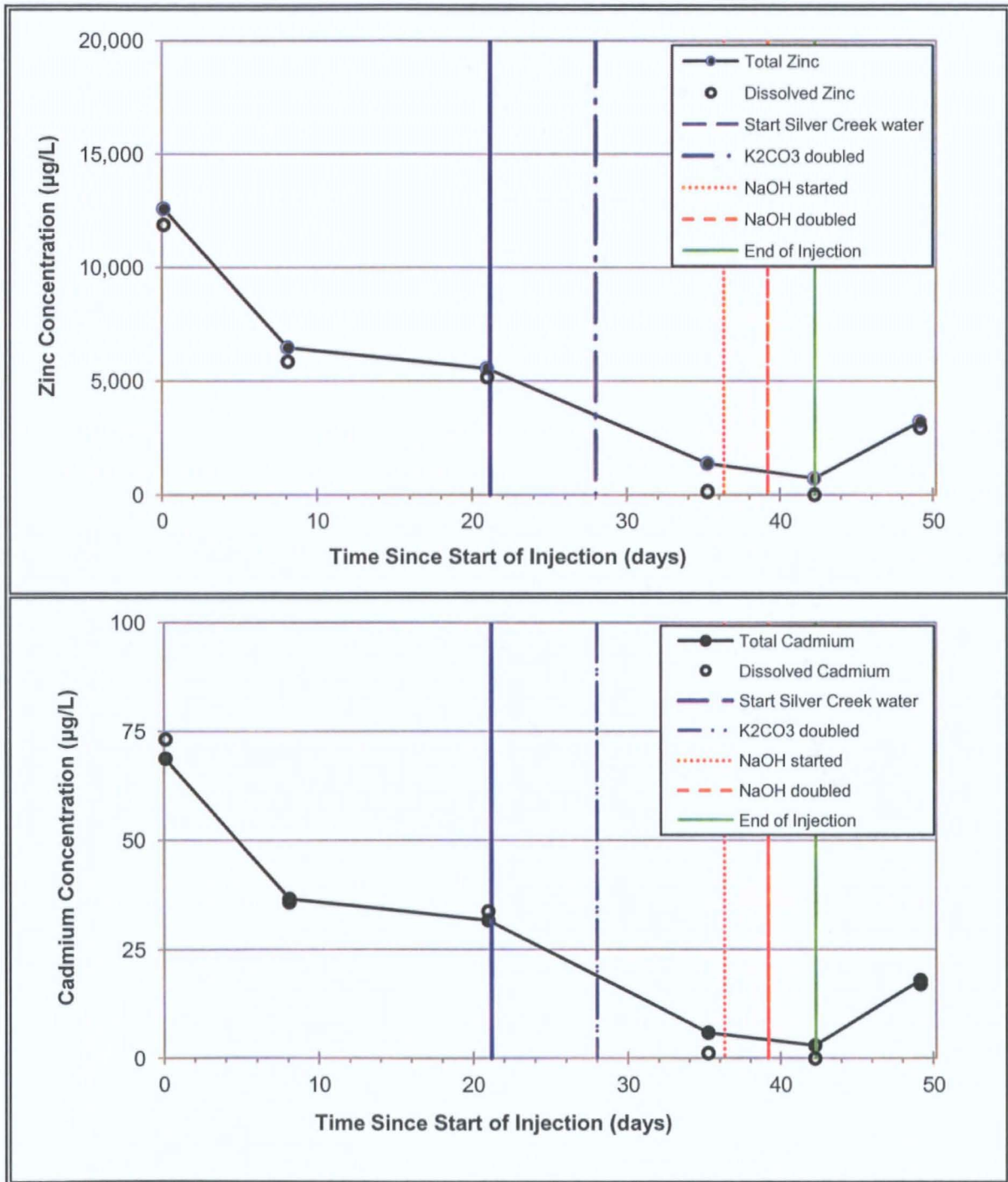


FIGURE 4-7
MANGANESE AND IRON CONCENTRATIONS IN THE 517 SHAFT
2012 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

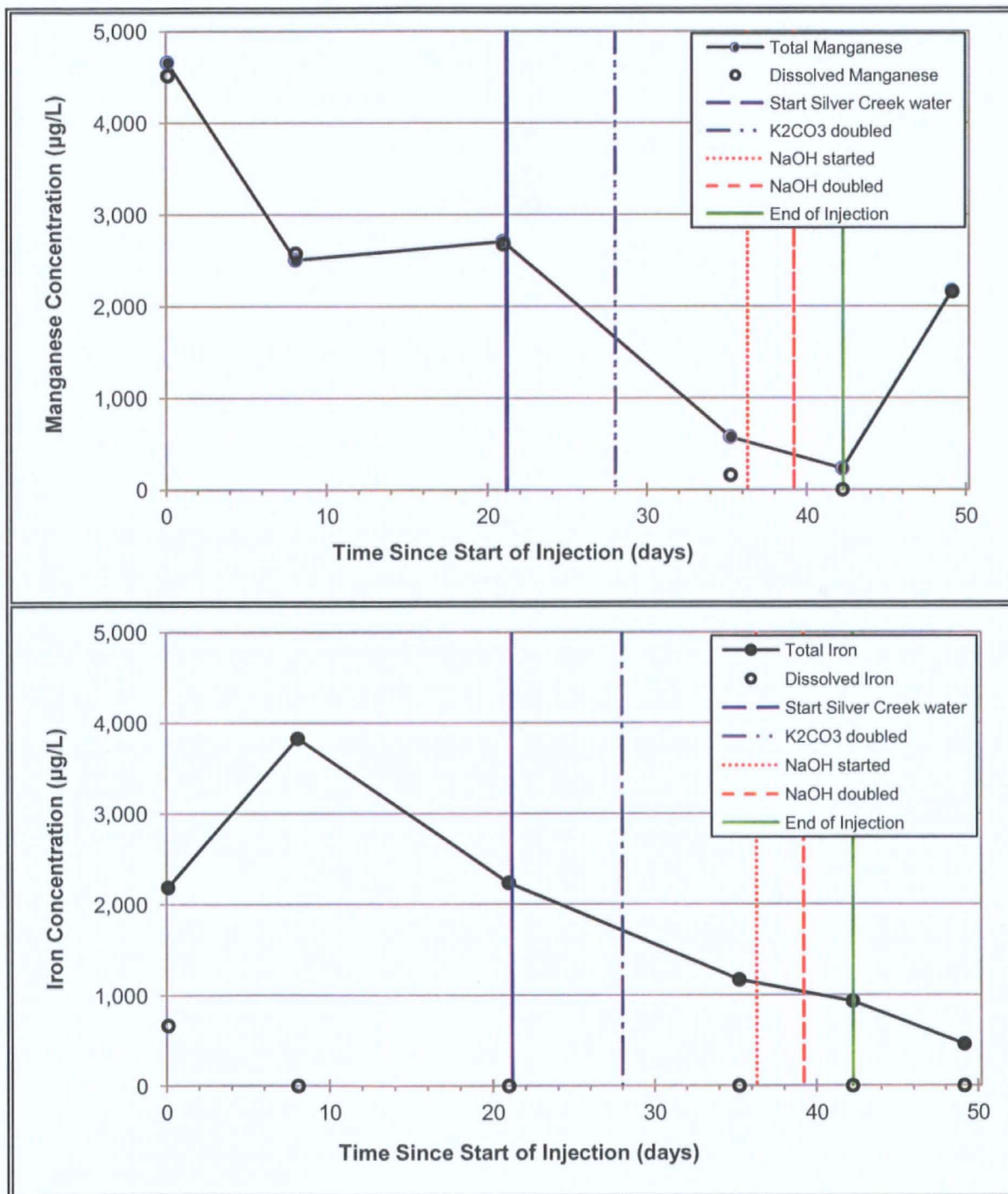


FIGURE 4-8
WATER QUALITY PARAMETERS AT DR-3A
2012 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

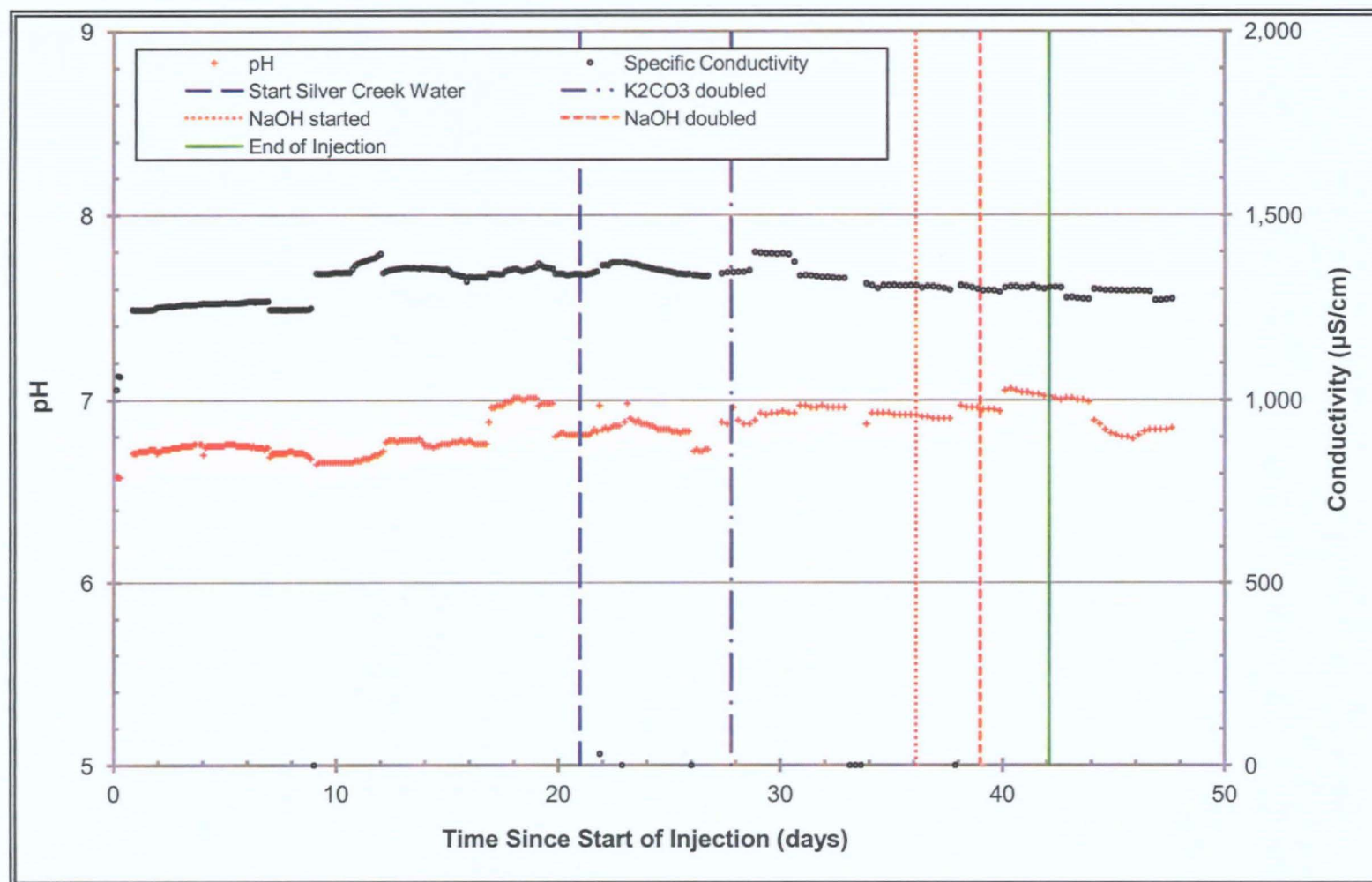


FIGURE 4-9
ALKALINITY AND SULFATE CONCENTRATIONS
DR-3A - 2012 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

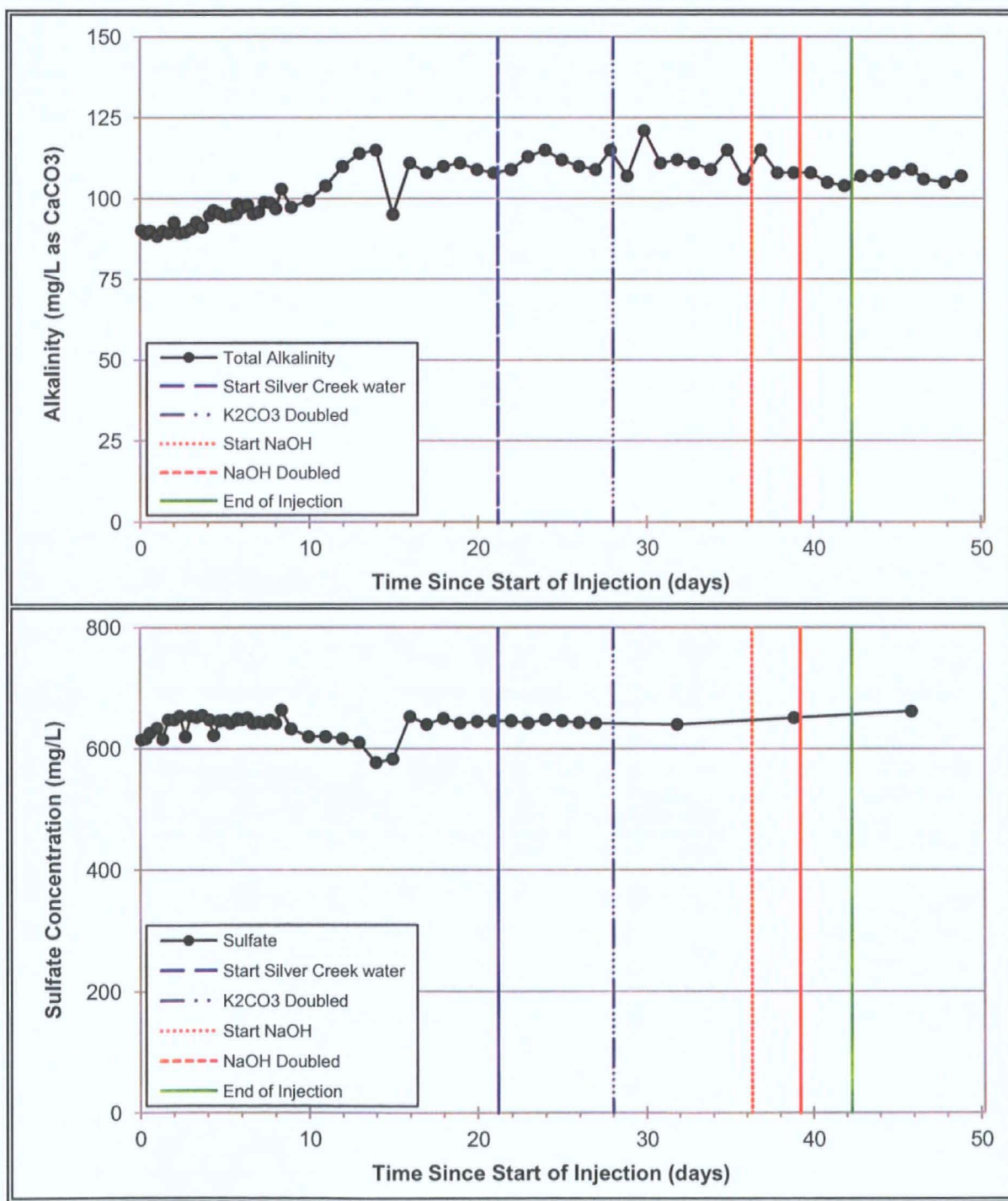


FIGURE 4-10
ZINC AND CADMIUM CONCENTRATIONS AT DR-3A
2012 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

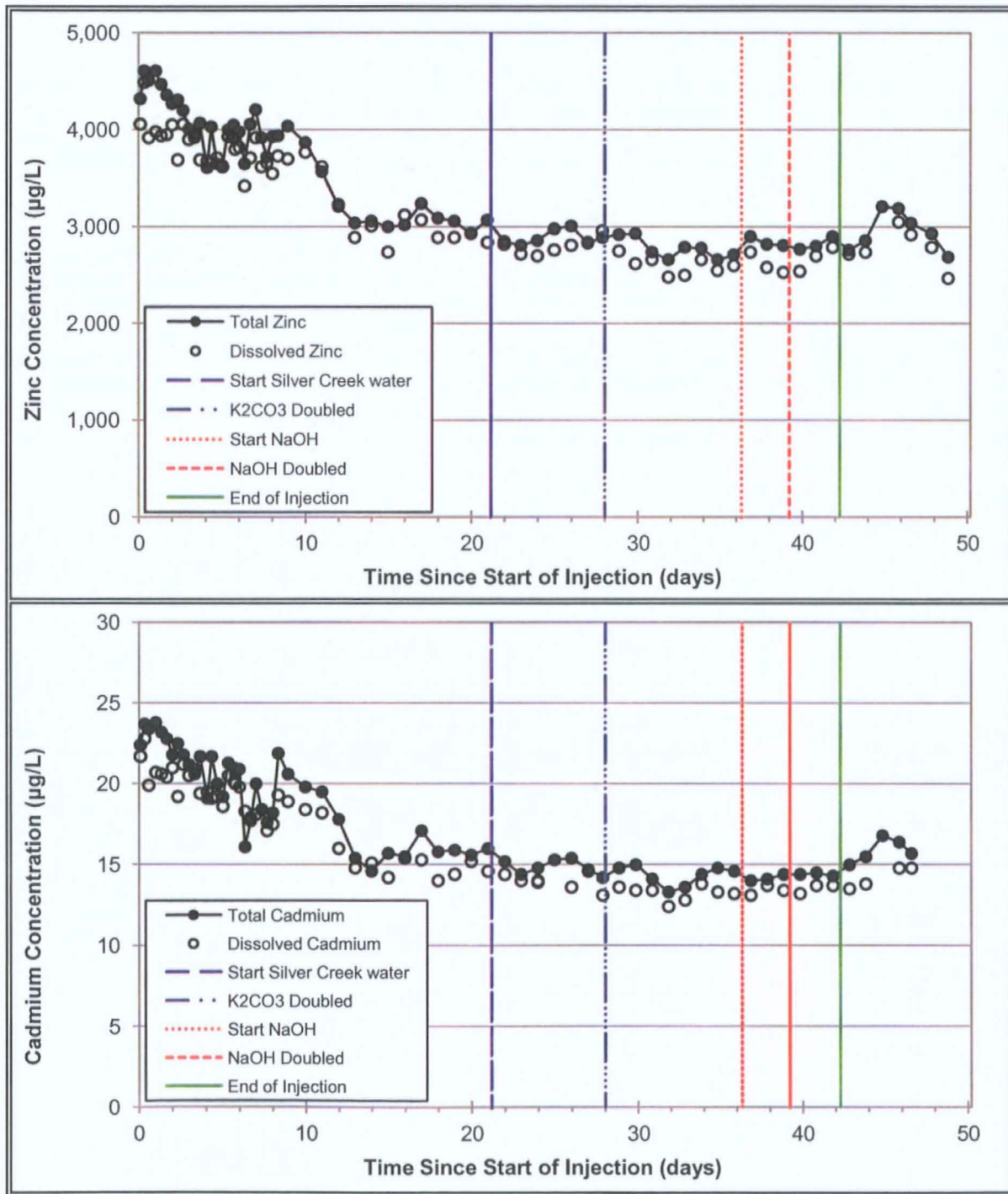


FIGURE 4-11
MANGANESE AND IRON CONCENTRATIONS AT DR-3A
2012 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

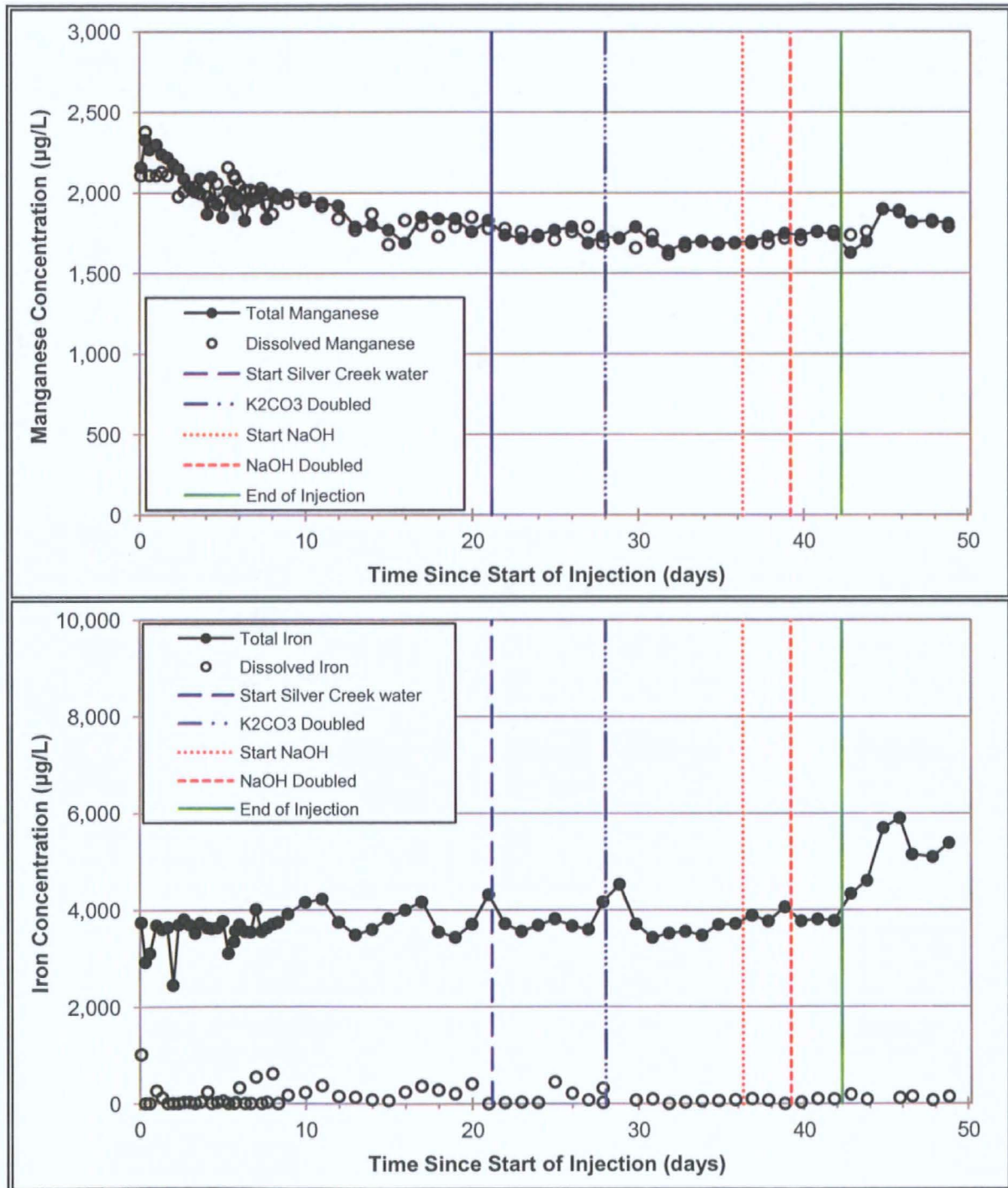


FIGURE 4-12
CALCIUM AND MAGNESIUM CONCENTRATIONS AT DR-3A
2012 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

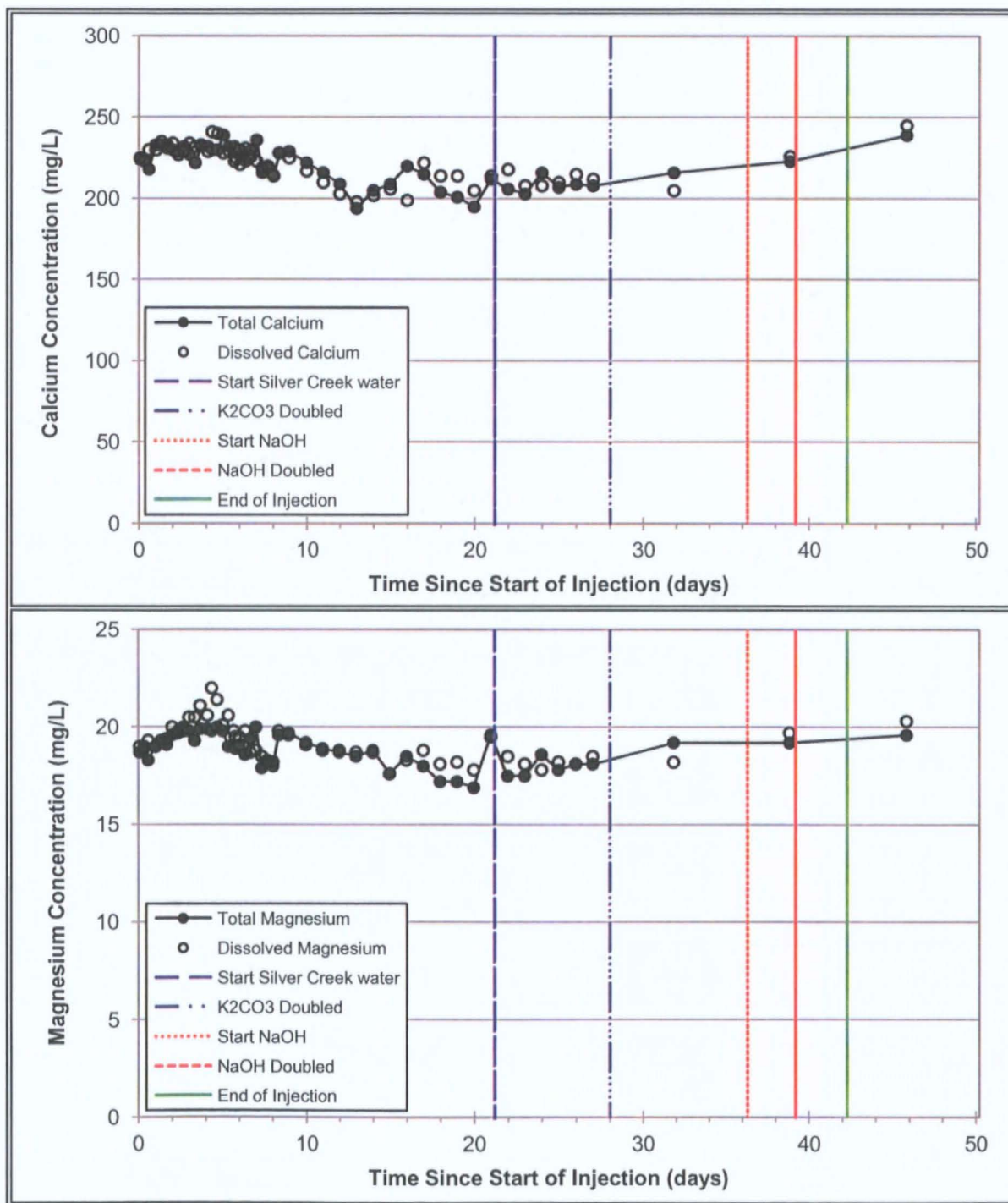


FIGURE 4-13
LITHIUM AND CHLORIDE CONCENTRATIONS AT DR-3A
2012 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

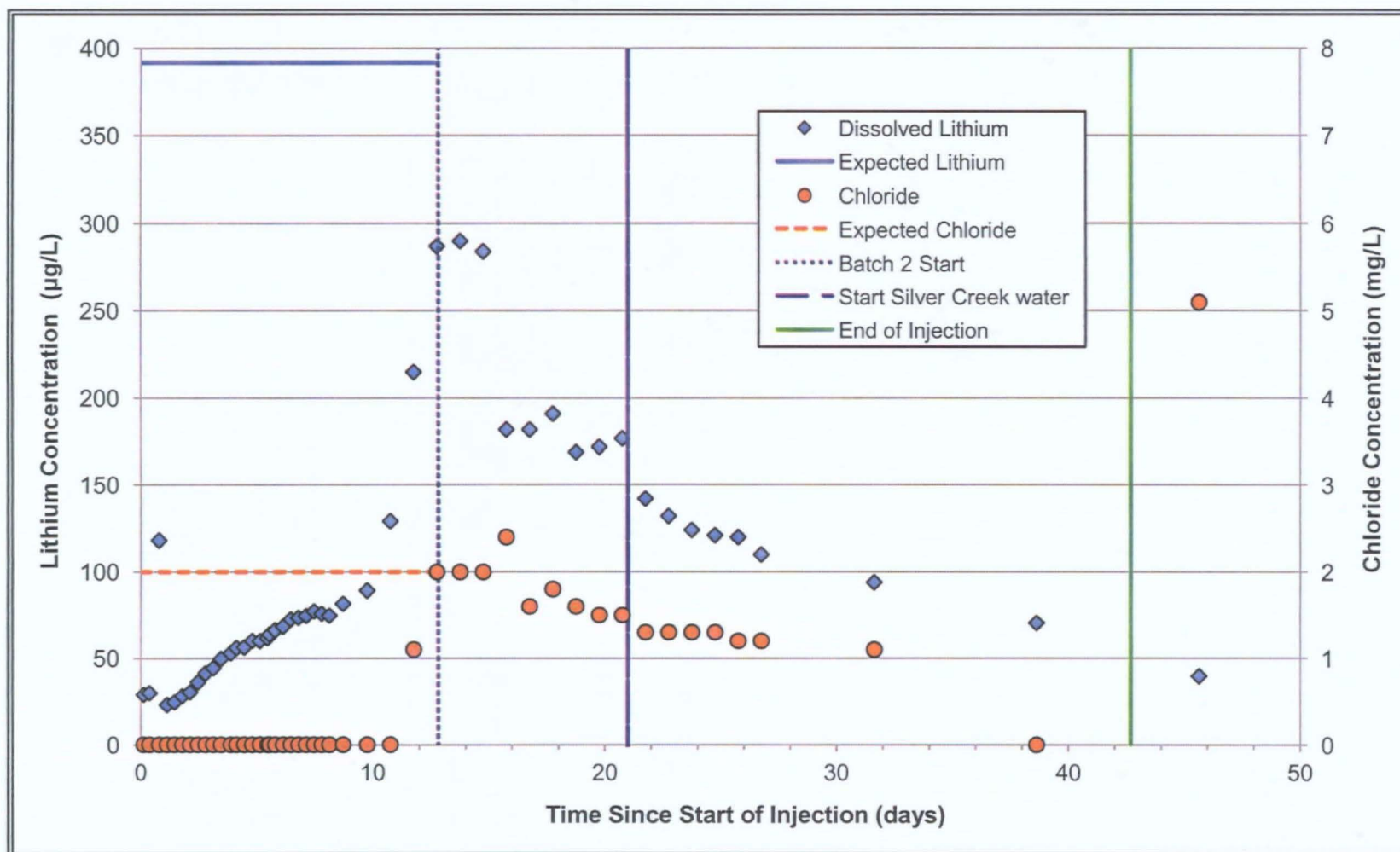


FIGURE 4-14
POTASSIUM AND LITHIUM CONCENTRATIONS AT DR-3A
2012 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

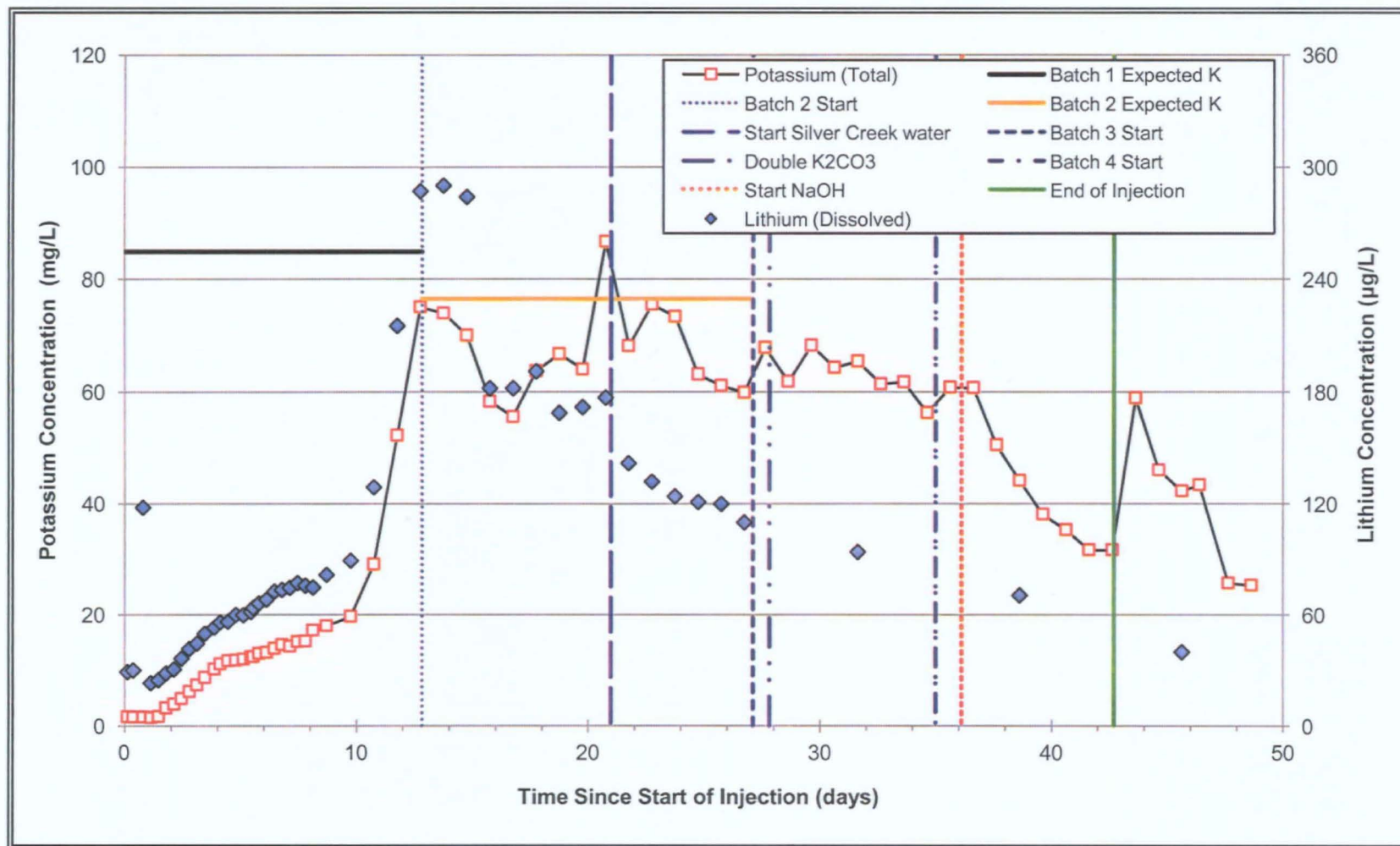


FIGURE 4-15
NORMALIZED POTASSIUM AND LITHIUM CONCENTRATIONS AT DR-3A
2012 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

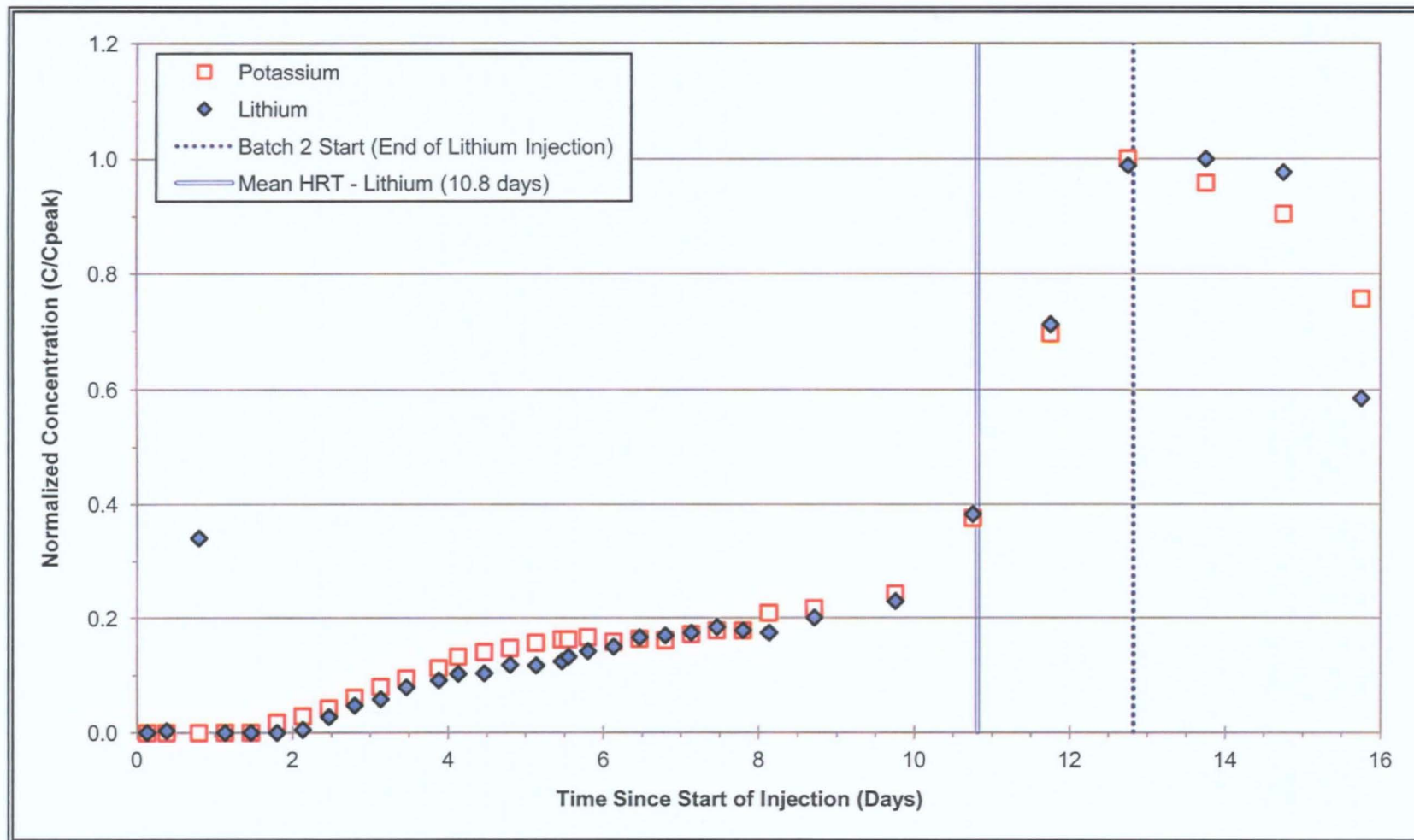


FIGURE 4-16
SODIUM CONCENTRATIONS AT DR-3A
2012 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

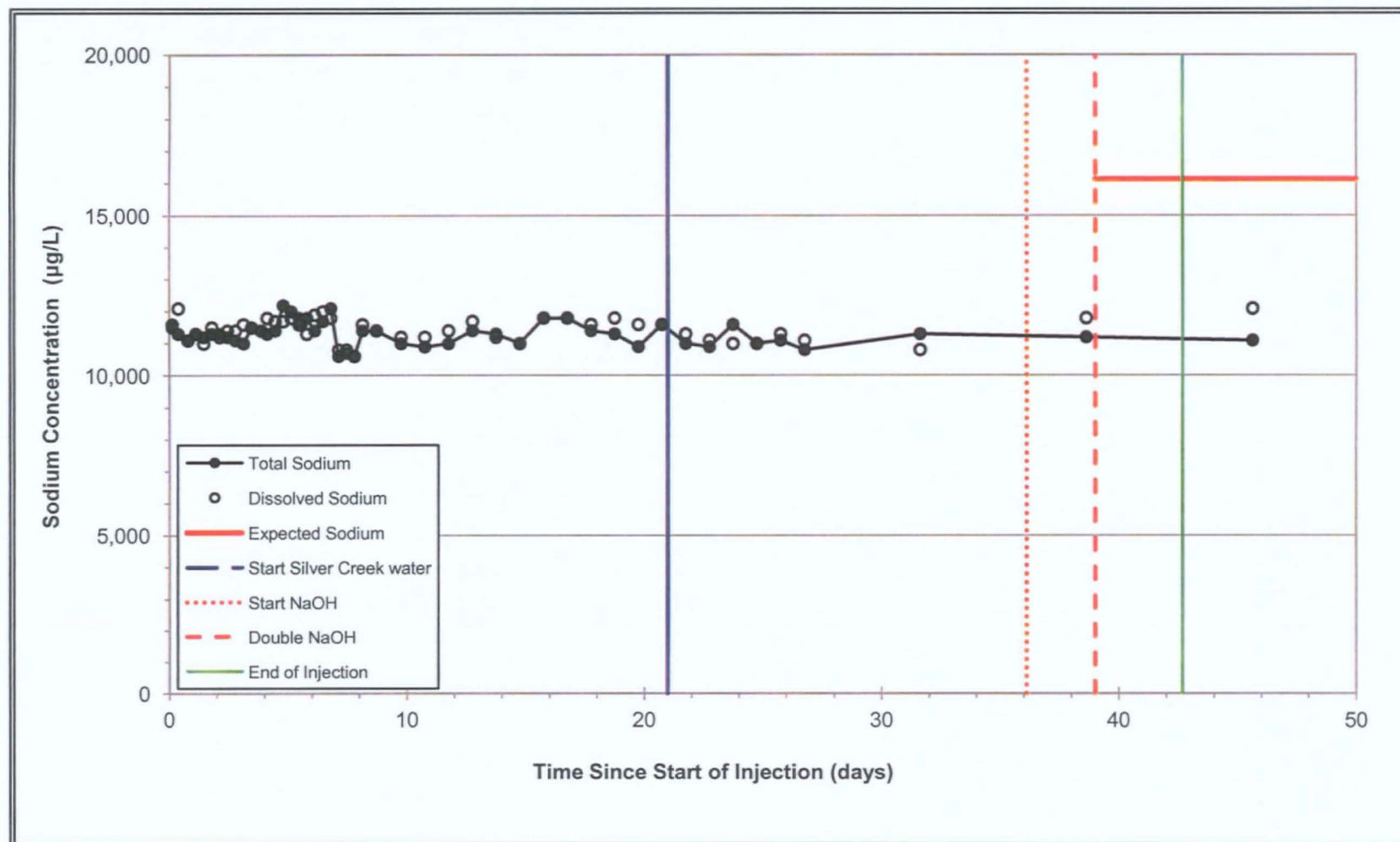
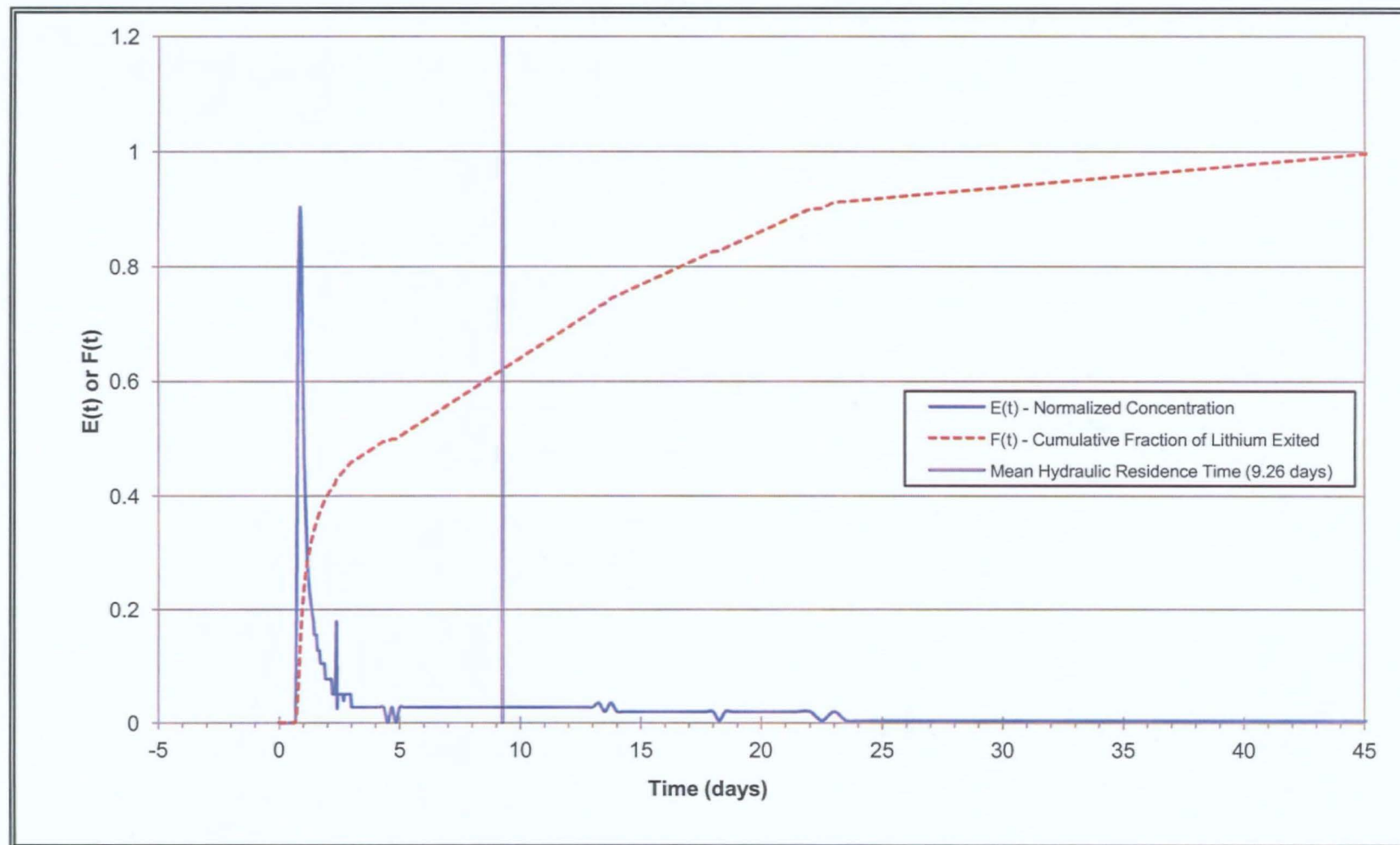
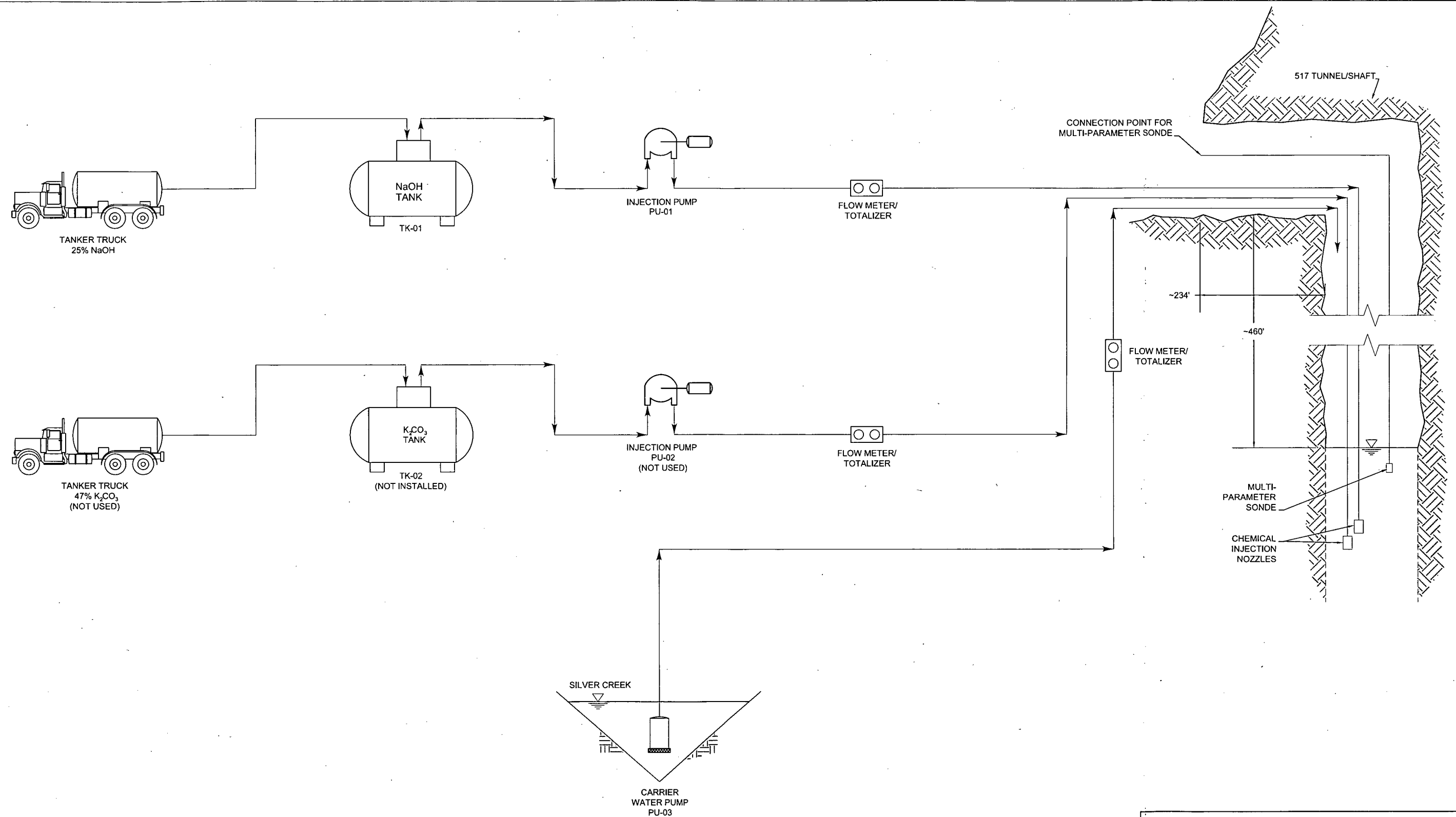


FIGURE 4-17
RESIDENCE TIME DISTRIBUTION CURVES
2011 TRACER TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado



Plot Date: 03/27/14 - 10:05am, Plotted by: donna.valasek
Drawing Path: P:\Project\16000s\SA11161300 - Rico-Argentine Mine Site\14000_CAD\517_Tunnel, Drawing Name: 2_PROCESS-FLOW DIAGRAM.dwg



PROCESS FLOW DIAGRAM 2013 Injection System Rico-Argentine Mine Site Dolores County, Colorado		
By: dpv	Date: 03/27/14	Project No. SA11161313
		Figure 5-1

FIGURE 6-1
WATER QUALITY PARAMETERS IN THE 517 SHAFT
2013 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

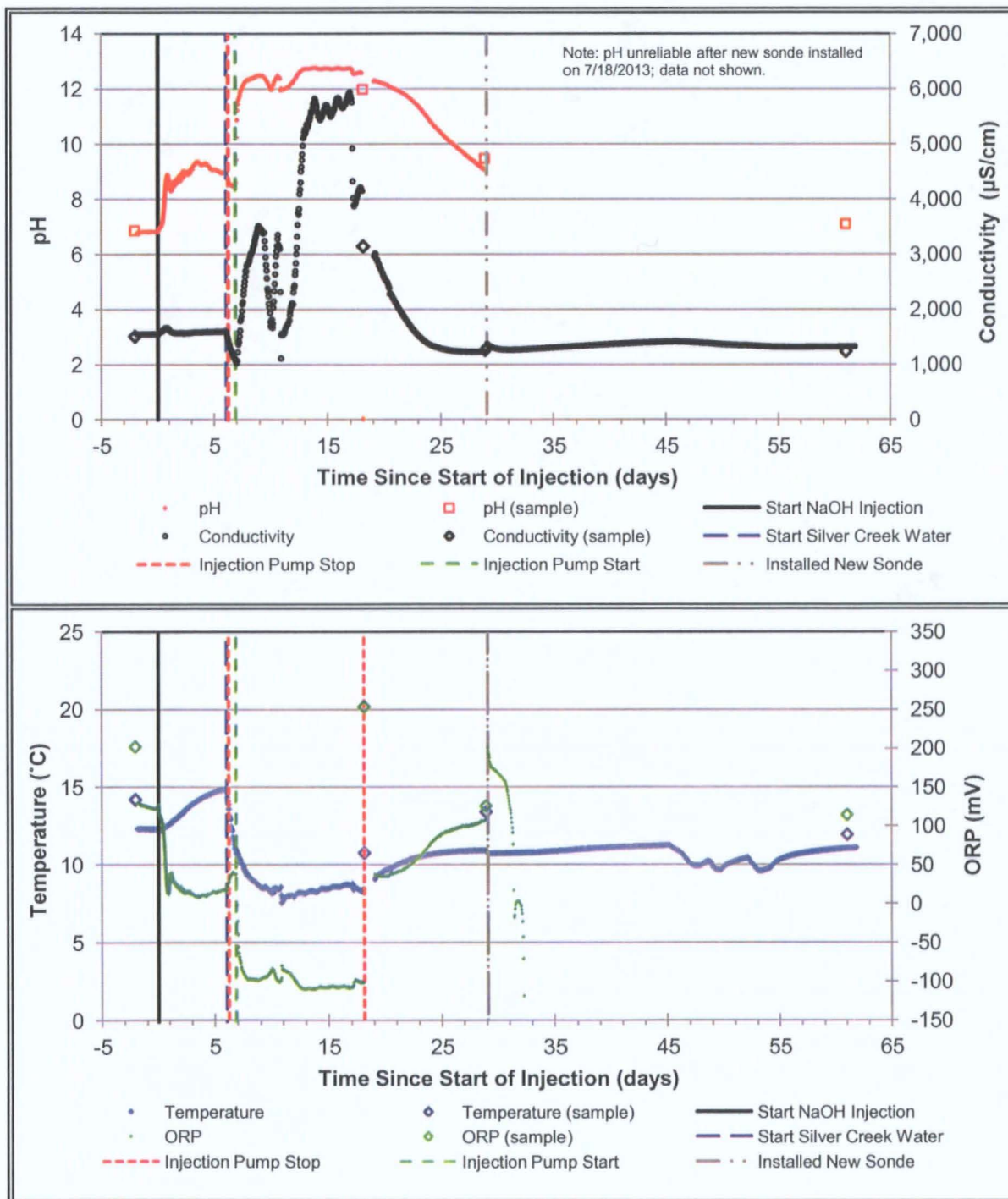


FIGURE 6-2
VERTICAL PROFILES OF WATER QUALITY PARAMETERS IN THE 517 SHAFT
2013 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

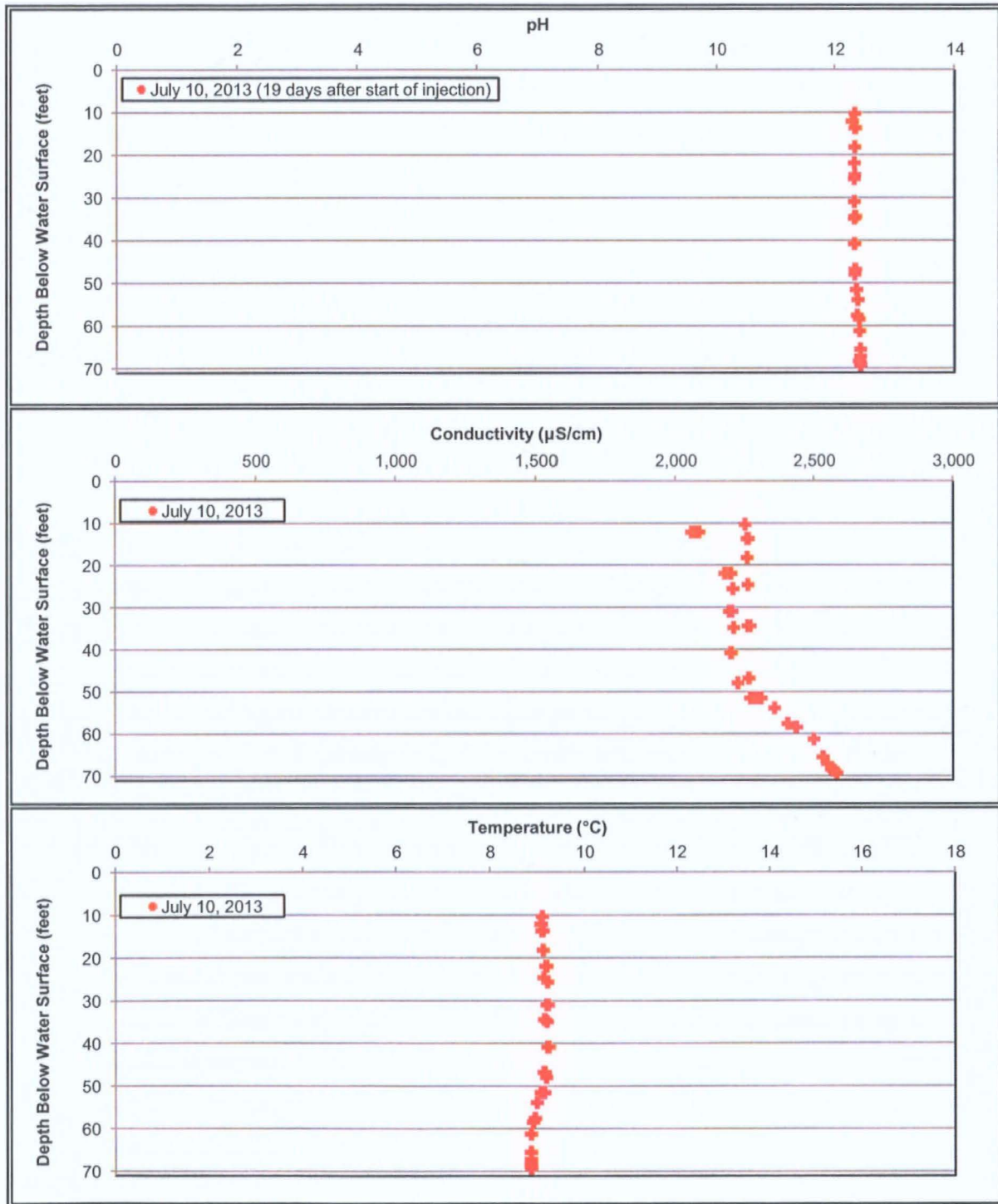


FIGURE 6-3
ALKALINITY AND SULFATE CONCENTRATIONS IN THE 517 SHAFT
2013 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

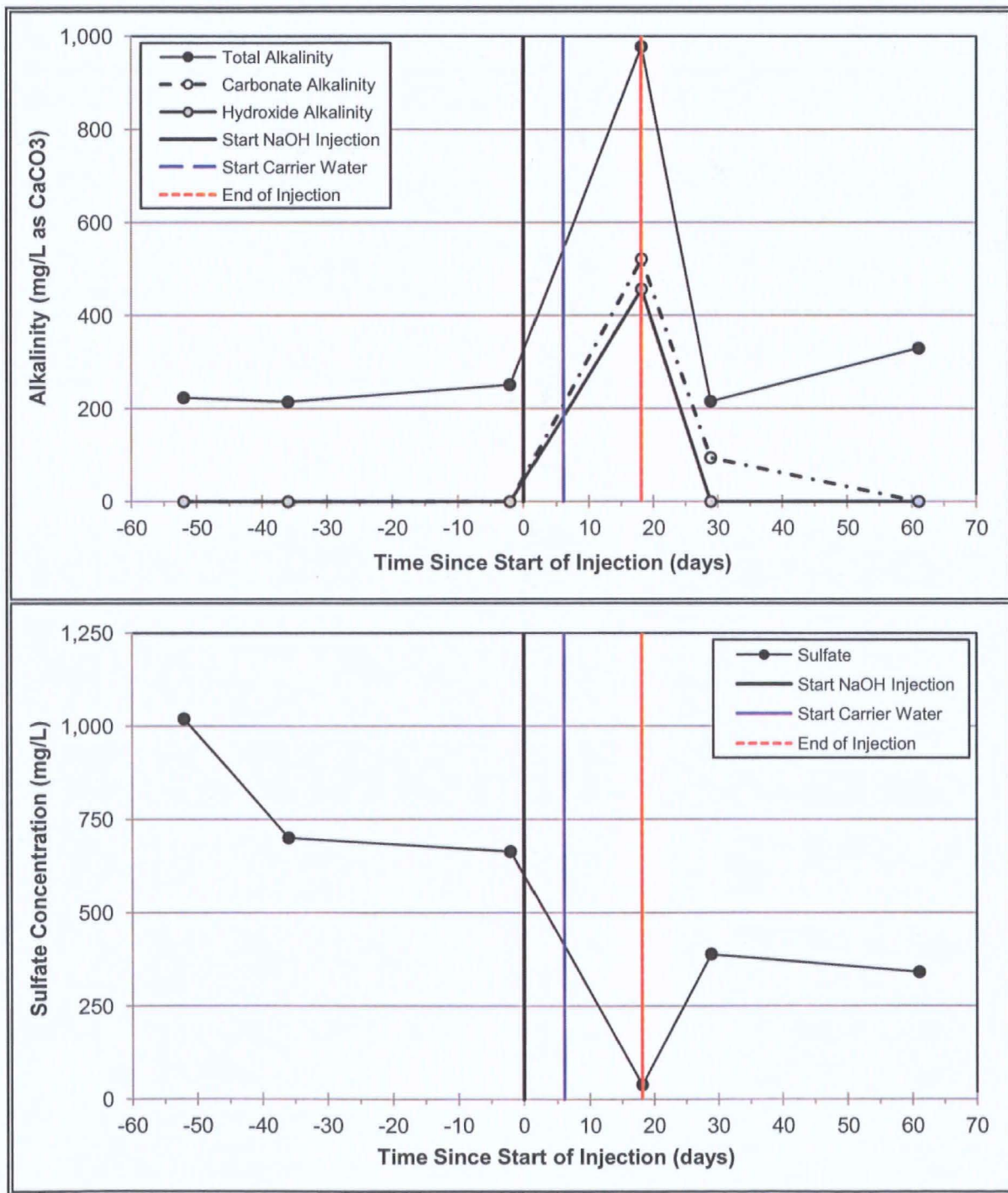


FIGURE 6-4
CALCIUM AND MAGNESIUM CONCENTRATIONS IN THE 517 SHAFT
2013 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

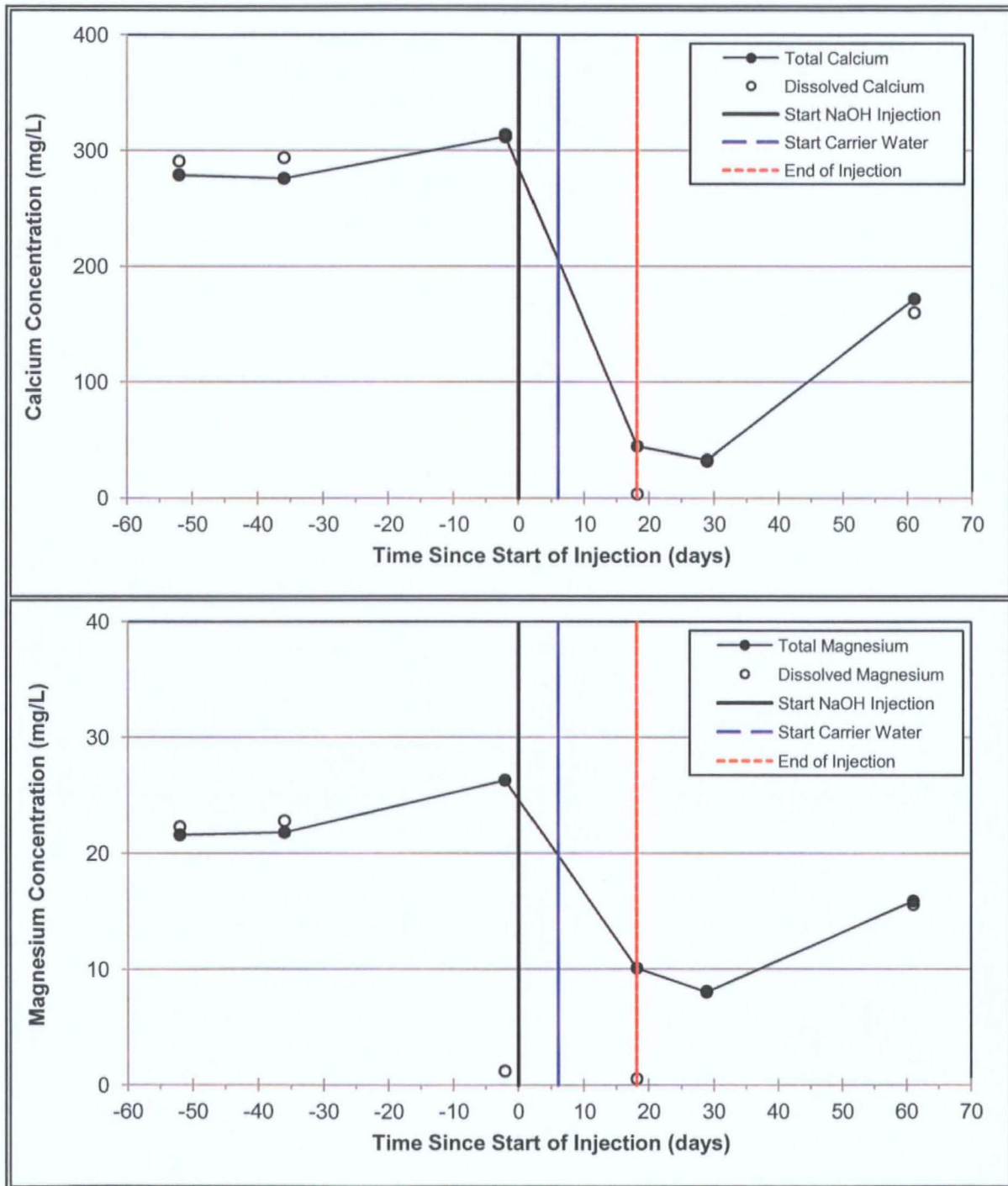


FIGURE 6-5
ZINC AND CADMIUM CONCENTRATIONS IN THE 517 SHAFT
2013 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

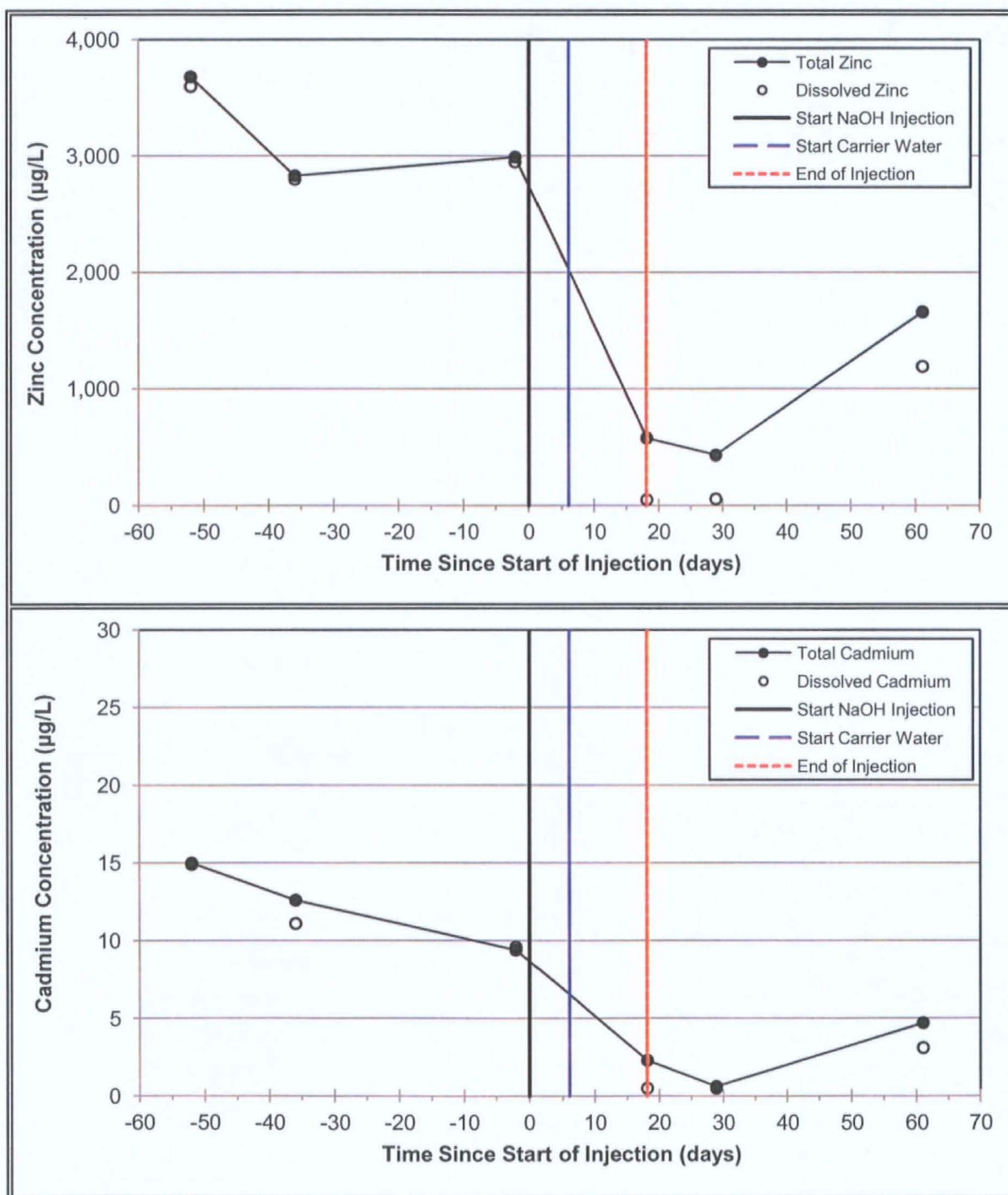


FIGURE 6-6
MANGANESE AND IRON CONCENTRATIONS IN THE 517 SHAFT
2013 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

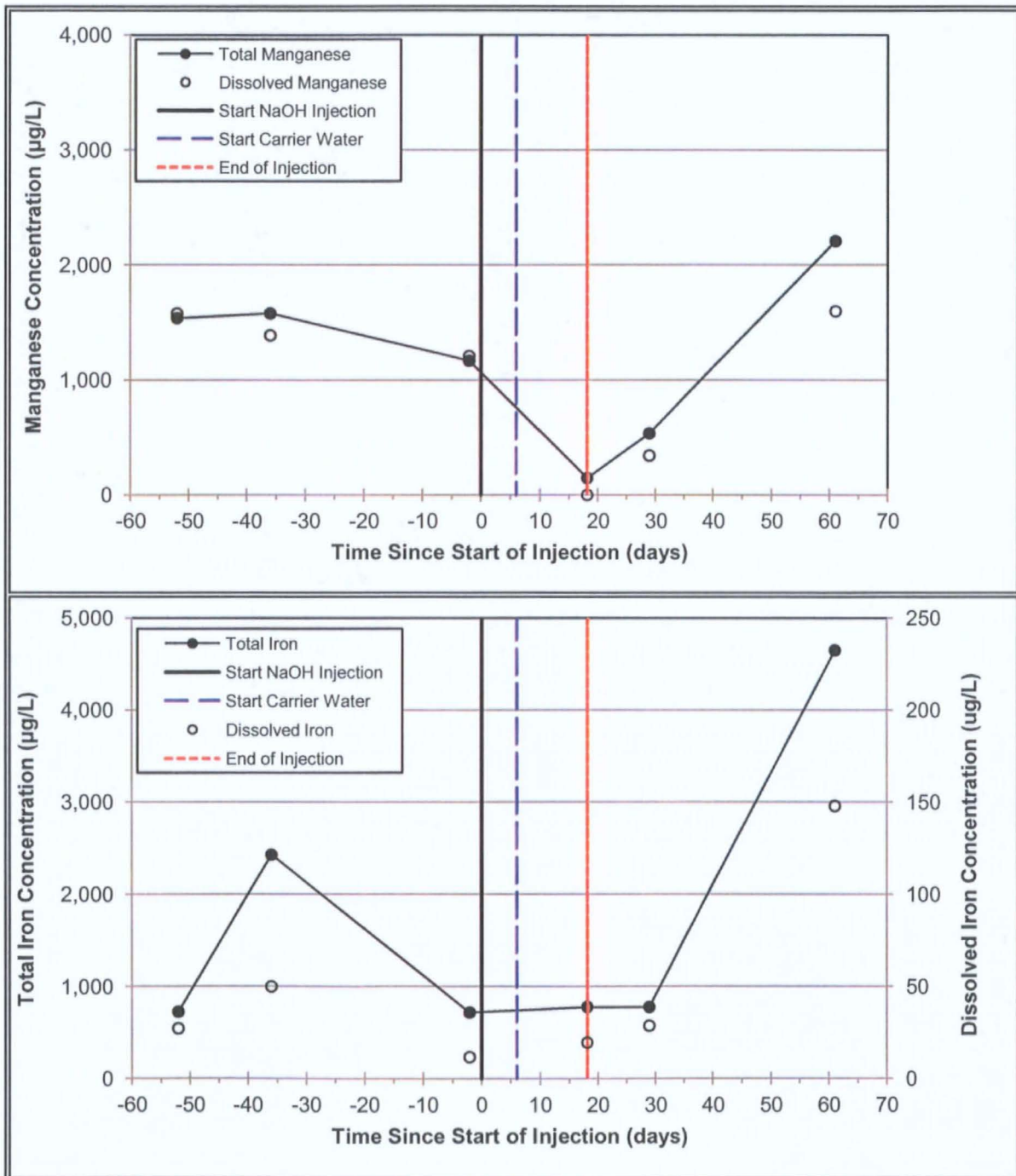


FIGURE 6-7
WATER QUALITY PARAMETERS AT DR-3A
2013 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

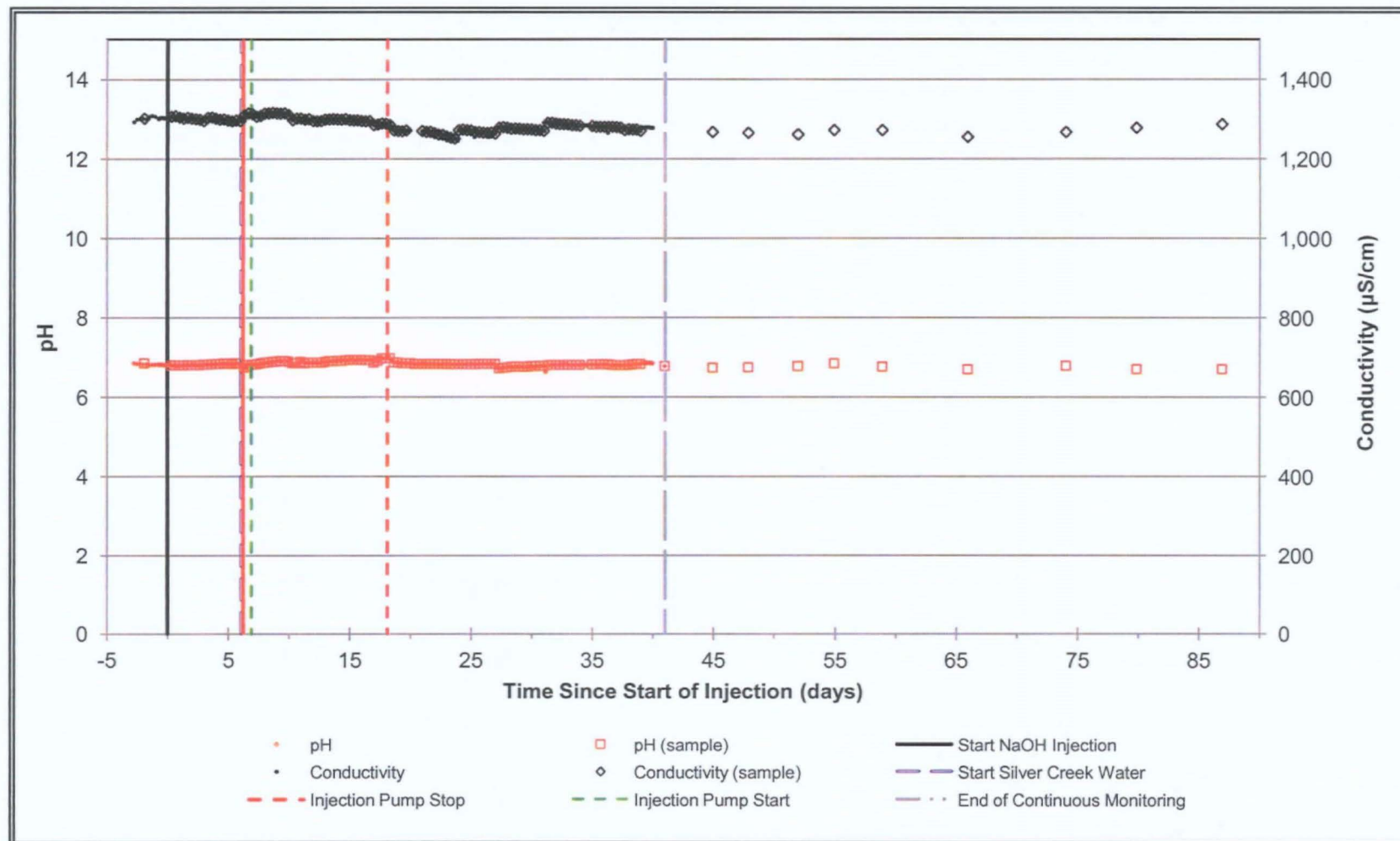


FIGURE 6-8
ALKALINITY AND SULFATE CONCENTRATIONS AT DR-3A
2013 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

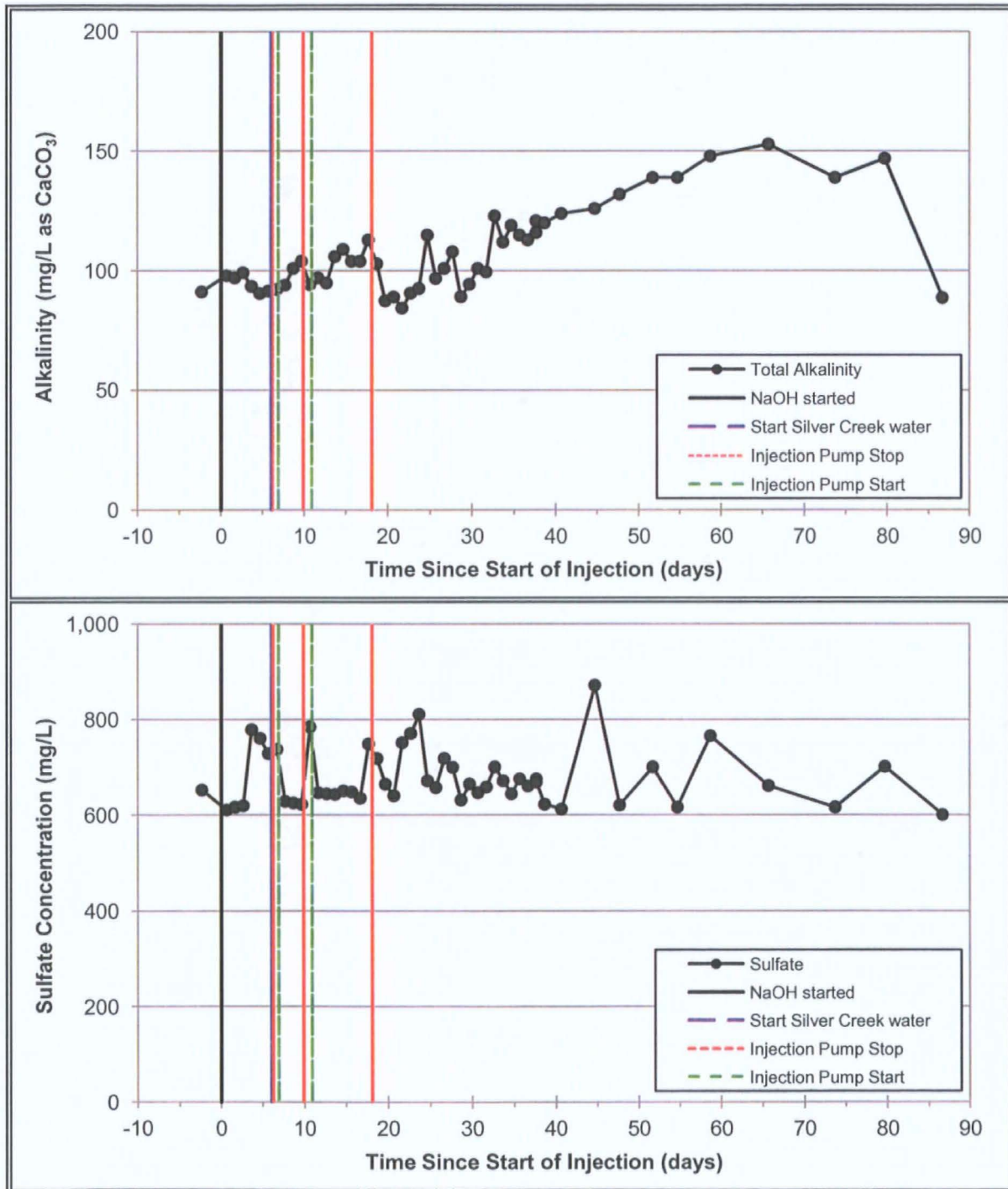


FIGURE 6-9
CALCIUM AND MAGNESIUM CONCENTRATIONS AT DR-3A
2013 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

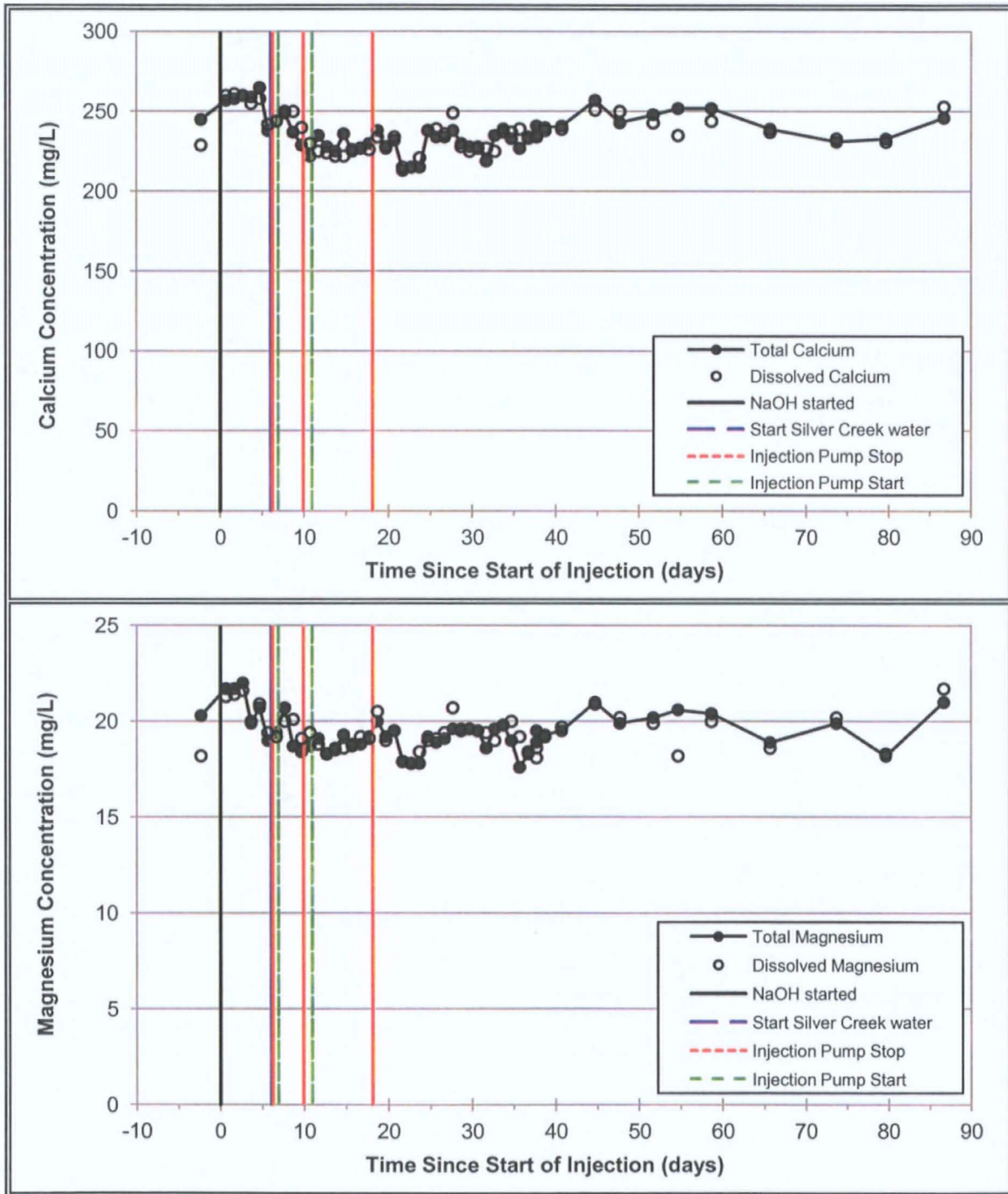


FIGURE 6-10
ZINC AND CADMIUM CONCENTRATIONS AT DR-3A
2013 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

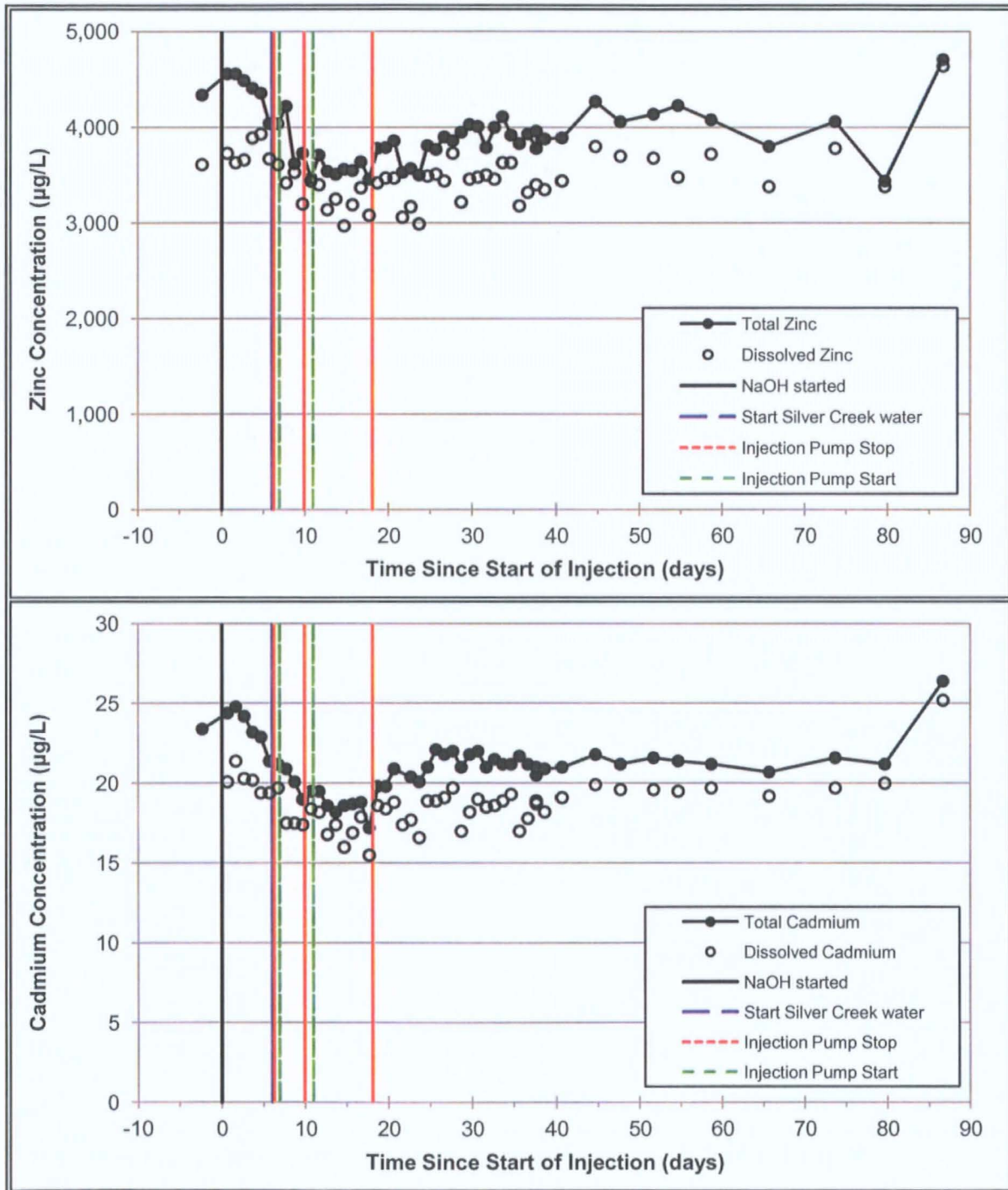


FIGURE 6-11
MANGANESE AND IRON CONCENTRATIONS AT DR-3A
2013 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

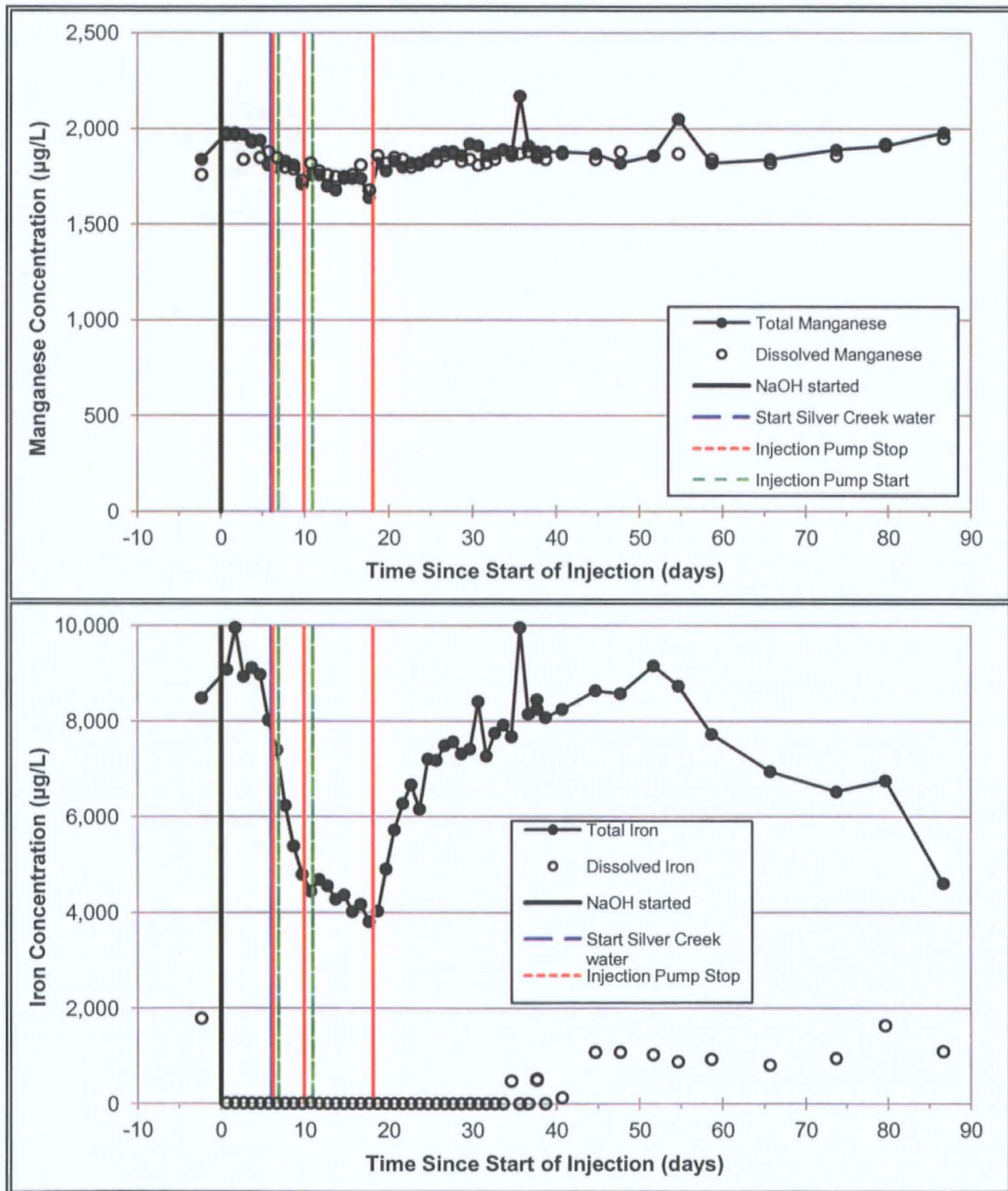
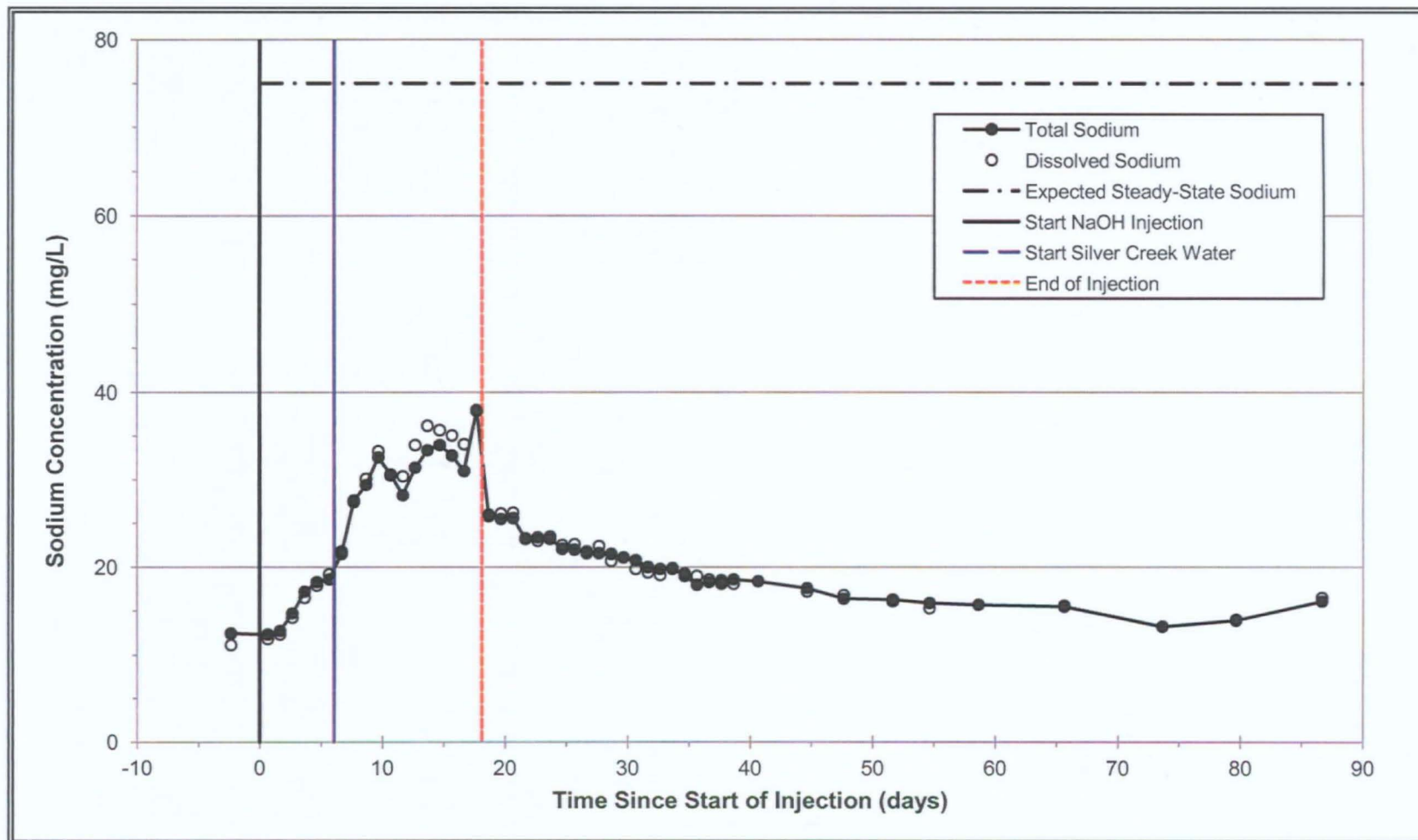


FIGURE 6-12
SODIUM CONCENTRATIONS AT DR-3A
2013 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado



APPENDIX A

2012 Injection Test Analytical and Monitoring Data

TABLE A-1
517 SHAFT WATER QUALITY DATA
2012 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

Date & Time	Elapsed Time (days)	Temperature (°C)	Specific Conductivity (µS/cm)	pH
9/26/2012 14:05	-0.03	14.94	1258.27	5.93
9/26/2012 18:00	0.13	14.85	4176.08	10.58
9/26/2012 20:00	0.22	14.9	4335.74	10.55
9/26/2012 22:00	0.30	14.98	4351.35	10.6
9/27/2012 12:00	0.88	15.47	4486.59	10.6
9/27/2012 14:00	0.97	15.51	4486.79	10.55
9/27/2012 16:00	1.05	15.56	4491.68	10.55
9/27/2012 18:00	1.13	15.61	4562.41	10.62
9/27/2012 20:00	1.22	15.65	4554.4	10.61
9/27/2012 22:00	1.30	15.68	4578.26	10.63
9/28/2012 0:00	1.38	15.72	4614.26	10.66
9/28/2012 2:00	1.47	15.75	4620.03	10.66
9/28/2012 4:00	1.55	15.78	4631.08	10.68
9/28/2012 6:00	1.63	15.81	4640.14	10.68
9/28/2012 8:00	1.72	15.83	4660.77	10.67
9/28/2012 10:00	1.80	15.85	4606.5	10.67
9/28/2012 12:00	1.88	15.88	4583.11	10.65
9/28/2012 14:00	1.97	15.9	4676.45	10.65
9/28/2012 16:00	2.05	15.92	4697.41	10.69
9/28/2012 18:00	2.13	15.93	4697.98	10.65
9/28/2012 20:00	2.22	15.95	4718.24	10.65
9/28/2012 22:00	2.30	15.97	4752.2	10.65
9/29/2012 0:00	2.38	15.98	4721.22	10.62
9/29/2012 2:00	2.47	16.01	4744.13	10.65
9/29/2012 4:00	2.55	16.02	4741.04	10.63
9/29/2012 6:00	2.63	16.03	4765.7	10.64
9/29/2012 8:00	2.72	16.04	4747.14	10.62
9/29/2012 10:00	2.80	16.05	4760.7	10.63
9/29/2012 12:00	2.88	16.07	4778.07	10.64
9/29/2012 14:00	2.97	16.08	4759.42	10.62
9/29/2012 16:00	3.05	16.09	4764.67	10.63
9/29/2012 18:00	3.13	16.1	4772.73	10.64
9/29/2012 20:00	3.22	16.1	4778.95	10.62
9/29/2012 22:00	3.30	16.12	4777.68	10.63
9/30/2012 0:00	3.38	16.12	4791.73	10.64
9/30/2012 2:00	3.47	16.13	4783.26	10.64
9/30/2012 4:00	3.55	16.14	4759.31	10.63
9/30/2012 6:00	3.63	16.15	4757.14	10.62
9/30/2012 8:00	3.72	16.15	4753.12	10.63
9/30/2012 12:00	3.88	16.16	4759.89	10.62
9/30/2012 14:00	3.97	16.18	4762.36	10.62
9/30/2012 16:00	4.05	16.17	4744.45	10.63
9/30/2012 18:00	4.13	16.19	4753.06	10.63

TABLE A-1
517 SHAFT WATER QUALITY DATA
2012 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

Date & Time	Elapsed Time (days)	Temperature (°C)	Specific Conductivity (µS/cm)	pH
9/30/2012 20:00	4.22	16.19	4746.89	10.61
9/30/2012 22:00	4.30	16.2	4748.11	10.61
10/1/2012 0:00	4.38	16.2	4751.49	10.61
10/1/2012 2:00	4.47	16.2	4756.42	10.61
10/1/2012 4:00	4.55	16.21	4753.01	10.63
10/1/2012 6:00	4.63	16.23	4759.19	10.61
10/1/2012 8:00	4.72	16.22	4739.46	10.6
10/1/2012 10:00	4.80	16.22	4764.44	10.63
10/1/2012 12:00	4.88	16.23	4740.98	10.61
10/1/2012 14:00	4.97	16.22	4765.05	10.62
10/1/2012 16:00	5.05	16.23	4781.53	10.62
10/1/2012 18:00	5.13	16.23	4806	10.62
10/1/2012 20:00	5.22	16.23	4789.97	10.62
10/1/2012 22:00	5.30	16.24	4800.96	10.62
10/2/2012 0:00	5.38	16.24	4778.08	10.61
10/2/2012 2:00	5.47	16.25	4806.94	10.62
10/2/2012 4:00	5.55	16.24	4800.63	10.62
10/2/2012 6:00	5.63	16.24	4784.32	10.61
10/2/2012 8:00	5.72	16.24	4794.35	10.61
10/2/2012 10:00	5.80	16.24	4811.36	10.61
10/2/2012 12:00	5.88	16.24	4812.31	10.6
10/2/2012 14:00	5.97	16.24	4849.28	10.62
10/2/2012 16:00	6.05	16.24	4824.99	10.61
10/2/2012 18:00	6.13	16.24	4824.35	10.61
10/2/2012 20:00	6.22	16.24	4839.98	10.61
10/2/2012 22:00	6.30	16.24	4817.69	10.6
10/3/2012 0:00	6.38	16.24	4813.25	10.6
10/3/2012 2:00	6.47	16.25	4802.2	10.6
10/3/2012 4:00	6.55	16.25	4840.29	10.6
10/3/2012 6:00	6.63	16.24	4824.03	10.58
10/3/2012 8:00	6.72	16.25	4820.54	10.57
10/3/2012 10:00	6.80	16.24	4849.59	10.59
10/3/2012 12:00	6.88	16.25	4830.07	10.58
10/3/2012 14:00	6.97	16.25	4839	10.58
10/3/2012 16:00	7.05	16.25	4850.55	10.6
10/3/2012 18:00	7.13	16.24	4881.91	10.6
10/3/2012 20:00	7.22	16.25	4852.15	10.59
10/3/2012 22:00	7.30	16.26	4847.64	10.6
10/4/2012 0:00	7.38	16.26	4854.39	10.6
10/4/2012 2:00	7.47	16.26	4844.11	10.6
10/4/2012 4:00	7.55	16.26	4847.32	10.6
10/4/2012 6:00	7.63	16.25	4857.29	10.6
10/4/2012 8:00	7.72	16.26	4839.95	10.6

TABLE A-1
517 SHAFT WATER QUALITY DATA
2012 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

Date & Time	Elapsed Time (days)	Temperature (°C)	Specific Conductivity (µS/cm)	pH
10/4/2012 10:00	7.80	16.26	4864.06	10.6
10/4/2012 18:00	8.13	16.25	4918.38	10.51
10/4/2012 20:00	8.22	16.25	4858.15	10.52
10/4/2012 22:00	8.30	16.26	4864.11	10.52
10/5/2012 0:00	8.38	16.26	4855.18	10.52
10/5/2012 2:00	8.47	16.26	4853.69	10.5
10/5/2012 4:00	8.55	16.25	4831.82	10.51
10/5/2012 6:00	8.63	16.25	4884.16	10.51
10/5/2012 8:00	8.72	16.24	4872.46	10.51
10/5/2012 10:00	8.80	16.24	4892.89	10.51
10/5/2012 12:00	8.88	16.24	4943.5	10.52
10/5/2012 15:00	9.01	16.24	4929.67	10.52
10/5/2012 18:00	9.13	16.23	4949.04	10.51
10/5/2012 21:00	9.26	16.23	4937.95	10.51
10/6/2012 0:00	9.38	16.23	4939.18	10.5
10/6/2012 3:00	9.51	16.22	4980.72	10.5
10/6/2012 6:00	9.63	16.22	4976.66	10.51
10/6/2012 9:00	9.76	16.21	4956.14	10.5
10/6/2012 12:00	9.88	16.21	4976.34	10.51
10/6/2012 15:00	10.01	16.20	4981.96	10.5
10/6/2012 18:00	10.13	16.18	4995.75	10.51
10/6/2012 21:00	10.26	16.18	4971.02	10.5
10/7/2012 0:00	10.38	16.17	4962.31	10.5
10/7/2012 3:00	10.51	16.16	5046.57	10.51
10/7/2012 6:00	10.63	16.14	5026.42	10.5
10/7/2012 9:00	10.76	16.13	5021.64	10.5
10/7/2012 12:00	10.88	16.11	5067.16	10.51
10/7/2012 15:00	11.01	16.07	5088.92	10.51
10/7/2012 18:00	11.13	16.07	5103.96	10.5
10/7/2012 21:00	11.26	16.06	5110.86	10.5
10/8/2012 0:00	11.38	16.04	5103.62	10.5
10/8/2012 3:00	11.51	16.03	5138.98	10.5
10/8/2012 6:00	11.63	16.01	5091.81	10.48
10/8/2012 9:00	11.76	15.99	5203.33	10.51
10/8/2012 12:00	11.88	15.98	5153.64	10.49
10/8/2012 15:00	12.01	15.97	5220.43	10.5
10/8/2012 18:00	12.13	15.95	5059.95	10.49
10/8/2012 21:00	12.26	15.96	5189	10.5
10/9/2012 0:00	12.38	15.94	5201.58	10.5
10/9/2012 3:00	12.51	15.93	5229.35	10.49
10/9/2012 6:00	12.63	15.92	5229.68	10.5
10/9/2012 9:00	12.76	15.91	5228.99	10.48
10/9/2012 12:00	12.88	15.89	5414.91	10.47

TABLE A-1
517 SHAFT WATER QUALITY DATA
2012 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

Date & Time	Elapsed Time (days)	Temperature (°C)	Specific Conductivity (µS/cm)	pH
10/9/2012 15:00	13.01	15.90	5518.47	10.42
10/9/2012 18:00	13.13	15.90	5536.96	10.41
10/9/2012 21:00	13.26	15.90	5542.38	10.4
10/10/2012 0:00	13.38	15.89	5572.74	10.41
10/10/2012 3:00	13.51	15.89	5578.62	10.39
10/10/2012 6:00	13.63	15.90	5581.76	10.4
10/10/2012 9:00	13.76	15.89	5594.35	10.39
10/10/2012 12:00	13.88	15.89	5616.52	10.4
10/10/2012 15:00	14.01	15.88	5638.48	10.4
10/10/2012 18:00	14.13	15.89	5652.54	10.4
10/10/2012 21:00	14.26	15.89	5688.2	10.4
10/11/2012 0:00	14.38	15.88	5778.09	10.4
10/11/2012 3:00	14.51	15.88	5796.24	10.41
10/11/2012 6:00	14.63	15.88	5787.35	10.41
10/11/2012 9:00	14.76	15.88	5502.39	10.39
10/11/2012 15:00	15.01	15.88	5587.64	10.38
10/11/2012 18:00	15.13	15.88	5670.31	10.39
10/11/2012 21:00	15.26	15.89	5658.18	10.39
10/12/2012 0:00	15.38	15.89	5692.69	10.4
10/12/2012 3:00	15.51	15.89	5729.69	10.4
10/12/2012 6:00	15.63	15.89	5741.3	10.41
10/12/2012 9:00	15.76	15.89	5791.17	10.41
10/12/2012 12:00	15.88	15.89	5818.77	10.41
10/12/2012 15:00	16.01	15.89	5855.7	10.41
10/12/2012 18:00	16.13	15.88	5926.11	10.42
10/12/2012 21:00	16.26	15.87	5974.3	10.42
10/13/2012 0:00	16.38	15.87	6032.89	10.42
10/13/2012 3:00	16.51	15.84	6122.26	10.43
10/13/2012 6:00	16.63	15.83	6146.91	10.43
10/13/2012 9:00	16.76	15.81	6236.77	10.44
10/13/2012 12:00	16.88	15.79	6291.15	10.44
10/13/2012 15:00	17.01	15.77	6295.63	10.44
10/13/2012 18:00	17.13	15.77	6228.89	10.44
10/13/2012 21:00	17.26	15.76	6248.01	10.44
10/14/2012 0:00	17.38	15.74	6303.59	10.44
10/14/2012 3:00	17.51	15.73	6350.5	10.45
10/14/2012 6:00	17.63	15.70	6398.63	10.45
10/14/2012 9:00	17.76	15.69	6475.39	10.45
10/14/2012 12:00	17.88	15.68	6517.39	10.45
10/14/2012 15:00	18.01	15.67	6638.44	10.46
10/14/2012 18:00	18.13	15.65	6661.84	10.46
10/14/2012 21:00	18.26	15.64	6717.1	10.46
10/15/2012 0:00	18.38	15.63	6748.51	10.46

TABLE A-1
517 SHAFT WATER QUALITY DATA
2012 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

Date & Time	Elapsed Time (days)	Temperature (°C)	Specific Conductivity (µS/cm)	pH
10/15/2012 3:00	18.51	15.61	6787.75	10.46
10/15/2012 6:00	18.63	15.59	6806.37	10.47
10/15/2012 9:00	18.76	15.57	6918.52	10.47
10/15/2012 12:00	18.88	15.56	7012.05	10.48
10/15/2012 15:00	19.01	15.52	7125.39	10.48
10/15/2012 18:00	19.13	15.52	7212.82	10.49
10/15/2012 21:00	19.26	15.51	7231.87	10.49
10/16/2012 0:00	19.38	15.49	7109.37	10.48
10/16/2012 3:00	19.51	15.48	6927.47	10.47
10/16/2012 6:00	19.63	15.47	6977.42	10.47
10/16/2012 9:00	19.76	15.46	7082.68	10.47
10/16/2012 12:00	19.88	15.29	3107.12	10.46
10/16/2012 16:30	20.07	15.37	68.43	-12.77
10/16/2012 18:00	20.13	15.41	7182.92	9.6
10/16/2012 21:00	20.26	15.37	7348.84	9.8
10/18/2012 0:00	21.38	12.94	1680.98	9.93
10/18/2012 3:00	21.51	12.31	1758.3	9.83
10/18/2012 6:00	21.63	11.62	1868.9	9.77
10/18/2012 8:56	21.76	11.21	1998.52	9.75
10/18/2012 11:45	21.87	10.77	2083.41	9.74
10/18/2012 15:00	22.01	10.29	2313.8	9.7
10/18/2012 18:00	22.13	9.92	2446.8	9.65
10/18/2012 21:00	22.26	9.6	2567.64	9.64
10/19/2012 0:00	22.38	9.28	2669.13	9.65
10/19/2012 3:00	22.51	8.97	2761.43	9.6
10/19/2012 6:00	22.63	8.69	2842.15	9.58
10/19/2012 9:00	22.76	8.41	2908.8	9.53
10/19/2012 12:00	22.88	8.12	2978.32	9.5
10/19/2012 15:00	23.01	7.9	3023.37	9.44
10/19/2012 18:00	23.13	7.77	3080.9	9.41
10/19/2012 21:00	23.26	7.62	3124.06	9.41
10/20/2012 0:00	23.38	7.45	3174.15	9.38
10/20/2012 3:00	23.51	7.29	3215.72	9.38
10/20/2012 6:00	23.63	7.1	3234.06	9.34
10/20/2012 9:00	23.76	6.94	3281.51	9.35
10/20/2012 12:00	23.88	6.78	3310.12	9.33
10/20/2012 15:00	24.01	6.64	3344.5	9.3
10/20/2012 18:00	24.13	6.57	3381.68	9.29
10/20/2012 21:00	24.26	6.52	3417.02	9.3
10/21/2012 0:00	24.38	6.42	3439.17	9.27
10/21/2012 3:00	24.51	6.31	3453.95	9.25
10/21/2012 6:00	24.63	6.2	3442.44	9.23
10/21/2012 9:00	24.76	6.12	3438.56	9.24

TABLE A-1
517 SHAFT WATER QUALITY DATA
2012 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

Date & Time	Elapsed Time (days)	Temperature (°C)	Specific Conductivity (µS/cm)	pH
10/21/2012 12:00	24.88	5.97	3448.15	9.22
10/21/2012 15:00	25.01	5.94	3452.75	9.22
10/21/2012 18:00	25.13	5.91	3471.01	9.21
10/21/2012 21:00	25.26	5.9	3481.38	9.19
10/22/2012 0:00	25.38	5.86	3490.92	9.16
10/22/2012 3:00	25.51	5.82	3500.97	9.15
10/22/2012 6:00	25.63	5.78	3517.34	9.16
10/22/2012 9:00	25.76	5.71	3515.09	9.15
10/22/2012 12:00	25.88	5.65	3518.81	9.14
10/22/2012 15:00	26.01	5.61	3514.03	9.12
10/22/2012 18:00	26.13	5.62	3514.48	9.13
10/22/2012 21:00	26.26	5.63	3506.43	9.13
10/23/2012 0:00	26.38	5.61	3510.45	9.12
10/23/2012 3:00	26.51	5.61	3507.62	9.1
10/23/2012 6:00	26.63	5.60	3475.49	9.09
10/23/2012 9:00	26.76	5.61	3475.49	9.08
10/24/2012 0:00	27.38	5.57	3525.26	9.05
10/24/2012 6:00	27.63	5.56	3597.62	9.02
10/24/2012 12:30	27.90	5.46	3705.26	9.01
10/24/2012 18:00	28.13	5.46	3985.93	8.98
10/25/2012 0:00	28.38	5.97	3997.38	8.97
10/25/2012 6:00	28.63	6.41	3899.46	8.97
10/25/2012 11:45	28.87	2.48	113.95	8.96
11/1/2012 12:00	35.88	9.84	6301.36	10.67
11/1/2012 16:00	36.05	11.14	5322.17	10.6
11/1/2012 18:00	36.13	11.22	5115.39	10.59
11/2/2012 0:00	36.38	11.17	5636.87	10.65
11/2/2012 6:00	36.63	11.25	6063.33	10.67
11/2/2012 12:00	36.88	11.42	6113.23	10.67
11/2/2012 18:00	37.13	11.43	6092.59	10.68
11/3/2012 0:00	37.38	11.59	6002.61	10.69
11/3/2012 6:00	37.63	11.86	6002.41	10.7
11/3/2012 12:00	37.88	12.06	6027.36	10.72
11/3/2012 18:00	38.13	11.98	6011.41	10.75
11/4/2012 0:00	38.38	12.31	6102.08	10.79
11/4/2012 6:00	38.63	12.99	6186.56	10.84
11/4/2012 12:00	38.88	13.7	6258.24	10.88
11/4/2012 18:02	39.14	13.33	6291.89	10.95
11/5/2012 0:02	39.39	13.58	6460.48	11.12
11/5/2012 6:02	39.64	13.95	6637.94	11.27
11/5/2012 12:07	39.89	13.7	6540.79	11.21
11/5/2012 18:07	40.14	13.42	6199.42	11.1
11/6/2012 0:07	40.39	13.33	5915.92	11.1

TABLE A-1
517 SHAFT WATER QUALITY DATA
2012 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

Date & Time	Elapsed Time (days)	Temperature (°C)	Specific Conductivity (µS/cm)	pH
11/6/2012 6:07	40.64	13.78	5927.2	11.19
11/6/2012 12:00	40.88	13.59	6020.99	11.21
11/6/2012 18:00	41.13	13.02	5849.12	11.15
11/7/2012 0:00	41.38	13.39	5908.29	11.22
11/7/2012 6:00	41.63	13.86	6071.17	11.34
11/7/2012 12:00	41.88	13.38	5966.05	11.29
11/7/2012 18:00	42.13	12.81	4957.07	11.65
11/8/2012 0:00	42.38	12.94	4284.08	11.53
11/8/2012 6:00	42.63	13	3635.27	11.28
11/8/2012 12:00	42.88	12.92	3905.87	11.18
11/8/2012 18:00	43.13	13.23	4656.51	11.17
11/9/2012 0:00	43.38	13.91	3787.89	11.01
11/9/2012 6:00	43.63	14.32	3172.14	10.86
11/9/2012 12:00	43.88	14.55	2735.59	10.7
11/9/2012 18:00	44.13	14.7	2413.51	10.54
11/10/2012 0:00	44.38	14.77	2174.73	10.36
11/10/2012 6:00	44.63	14.81	1988.65	10.15
11/10/2012 12:00	44.88	14.79	1861.42	9.91
11/10/2012 18:00	45.13	14.75	1770.02	9.62
11/11/2012 0:00	45.38	14.74	1699.59	9.3
11/11/2012 6:00	45.63	14.7	1644.22	9.03
11/11/2012 12:00	45.88	14.67	1602.65	8.85
11/11/2012 18:00	46.13	14.61	1568.77	8.71
11/12/2012 0:00	46.38	14.56	1538.71	8.62
11/12/2012 6:00	46.63	14.52	1511.58	8.55
11/12/2012 12:00	46.88	14.5	1486.45	8.45
11/12/2012 18:00	47.13	14.45	1464.36	8.38
11/13/2012 0:00	47.38	14.42	1444.27	8.29
11/13/2012 6:00	47.63	14.39	1426.54	8.19
11/14/2012 6:00	48.63	14.31	1360.87	7.8

Notes:

Start Time for the 2012 injection test was 14:45 on 9/26/2012

Sonde not installed in the 517 Shaft between October 25 and November 1 due to icing concerns.

Water quality data from the 517 Shaft were logged at time intervals of 1 to 15 minutes throughout the test. Data shown are a subset, corresponding to times that DR-3A samples were collected (see Tables A-3 and A-4).

Data from 10/17/2013 unavailable.

Abbreviations:

°C - degrees Centigrade

µS/cm - microSiemens per centimeter

TABLE A-2
517 SHAFT AND INJECTATE ANALYTICAL DATA
2012 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

Parameter	Sample ID		517 SHAFT 465	517SHAFT452121004	517SHAFT529121004	517SHAFT465121017	517SHAFT465121031	517SHAFT465121107	517SHAFT465121114	517INJECT	517INJECT121016	517INJECT121030	517INJECT121106
	Sample Date & Time		9/26/2012 12:20	10/4/2012 12:00	10/4/2012 17:30	10/17/2012 9:15	10/31/2012 15:45	11/7/2012 16:00	11/14/2012 13:35	9/28/2012 11:20	10/16/2012 16:00	10/30/2012 16:55	11/6/2012 10:30
	Method	Units											
Metals													
Arsenic	EPA 200.8	µg/L	0.69 J	2.6 J	4.2 J	<5.0 Y	1.6 J	3.0 J	0.31 J	35.6 J	<100 Y	<1000 Y	NA*
Arsenic, Dissolved	EPA 200.8	µg/L	0.28 J	<10.0 Y	1.4 JY	<5.0 Y	0.80 J	1.1 J	0.24 J	29.7	<100 Y	<1000 Y	NA*
Cadmium	EPA 200.8	µg/L	68.8	36.6	39.3	31.7	5.9	3.0 J	17.9	<50.0	<50.0 Y	<500 Y	<500 Y
Cadmium, Dissolved	EPA 200.8	µg/L	73.2	35.8	34.7	33.7	1.2 J	<2.5 Y	17.0	16.3 J	<50.0 Y	<500 Y	<500 Y
Calcium	EPA 200.7	µg/L	290000	287000	281000	297000	31100	31600	185000	21400	24000	24800	NA*
Calcium, Dissolved	EPA 200.7	µg/L	285000	284000	278000	289000	7640	2640	195000	14500	17800	8300 J	NA*
Chromium	EPA 200.8	µg/L	1.8	3.7 JY	4.6 JY	0.64 J	2.0 J	5.9 J	0.62 J	49.9 JY	14.7 J	<1000 Y	NA*
Chromium, Dissolved	EPA 200.8	µg/L	0.22 J	2.8 JY	2.8 JY	<5.0 Y	0.96 J	<10.0 Y	0.40 J	33.1 J	14.7 J	<1000 Y	NA*
Cobalt	EPA 200.8	µg/L	6.1	4.6 JY	5.2 JY	2.8 J	0.62 J	2.1 JY	2.3	<100	<100 Y	62.0 J	NA*
Cobalt, Dissolved	EPA 200.8	µg/L	5.9	4.8 JY	4.6 JY	2.8 J	0.30 J	1.2 J	2.2	<100	<100 Y	57.0 J	NA*
Copper	EPA 200.8	µg/L	237	181	317	83.2	64.8	61.0	30.0	58.8 J	47.2 J	<1000 Y	NA*
Copper, Dissolved	EPA 200.8	µg/L	186	19.2	18.6	16.5	52.2	40.1 Y	16.9	80.3 J	<100 Y	<1000 Y	NA*
Iron	EPA 200.7/200.8	µg/L	2,190	3,830	8,690	2,240	1,170	932	460	<50000 Y	3390 J	2460 J	<50000 Y
Iron, Dissolved	EPA 200.7/200.8	µg/L	668	<50.0	<50.0	<50.0	<50.0	<250 Y	<50.0	<50000 Y	2490 J	<5000 Y	<50000 Y
Lead	EPA 200.8	µg/L	13.2	24.2 Y	55.0	20.1	49.5	196	8.6	107	10.9 J	364 J	NA*
Lead, Dissolved	EPA 200.8	µg/L	0.96 J	3.3 JY	3.3 JY	<5.0 Y	9.2	17.7 Y	0.37 J	68.9	9.0 J	346 J	NA*
Lithium, Dissolved	EPA 200.7/200.8	µg/L	32.6	251	238	31.9	834	71.8	58.1	426000	NA*	NA*	NA*
Magnesium	EPA 200.7	µg/L	25,600	23,600	23,300	25,000	12,700	9,600	24,000	4,420	3,390 J	4,040 J	NA*
Magnesium, Dissolved	EPA 200.7	µg/L	25,400	23,500	23,100	23,700	12,500	8,240	24,000	5,440	3,030 J	2,460 J	NA*
Manganese	EPA 200.8	µg/L	4,660	2,510	2,640	2,710	577	232	2,170	69.6 J	74.1 J	<1000 Y	<1000 Y
Manganese, Dissolved	EPA 200.8	µg/L	4,520	2,580	2,560	2,680	161	<10.0 Y	2,160	77	66.6 J	<1000 Y	232 J
Mercury	EPA 245.1	µg/L	<0.20	NA*	NA*	NA*	NA*	NA*	NA*	NA*	NA*	NA*	NA*
Nickel	EPA 200.8	µg/L	13.0	5.6 J	5.3 J	4.2 J	2.4 J	<10.0 Y	2.7	<100 Y	<100 Y	<1000 Y	NA*
Nickel, Dissolved	EPA 200.8	µg/L	12.9	5.4 JY	5.8 JY	3.5 J	2.5 J	<10.0 Y	2.7	<100 Y	<100 Y	<1000 Y	NA*
Potassium	EPA 200.7	µg/L	1,710	61,100	58,700	109,000	2,400,000	2,440,000	308,000	173,000,000	158,000,000	190,000,000	395,000,000
Potassium, Dissolved	EPA 200.7	µg/L	1,740	60,500	58,200	75,900	2,320,000	2,470,000	296,000	177,000,000	128,000,000	190,000,000	NA*
Selenium	EPA 200.8	µg/L	<1.0	<10.0 Y	<10.0 Y	<5.0 Y	<5.0 Y	<10.0 Y	<1.0	<100 Y	40.6 J	<1000 Y	NA*
Selenium, Dissolved	EPA 200.8	µg/L	<1.0	<10.0 Y	<10.0 Y	<5.0 Y	<5.0 Y	<10.0 Y	<1.0	14.0	38.2 J	<1000 Y	NA*
Sodium	EPA 200.7	µg/L	9,880	9,990	9,860	9,980	13,600	210,000	22,700	371,000	588,000	636,000	NA*
Sodium, Dissolved	EPA 200.7	µg/L	9,840	9,890	9,750	9,410	13,600	211,000	21,700	453,000	472,000	394,000	NA*
Zinc	EPA 200.8	µg/L	12,600	6,480	6,960	5,560	1,360	708	3,210	605 J	357 J	<10000 Y	<10000 Y
Zinc, Dissolved	EPA 200.8	µg/L	11,900	5,860	5,900	5,180	141	<100 Y	2,940	293	321 J	<10000 Y	<10000 Y
General Chemicals													
Alkalinity, Bicarbonate (CaCO3)	SM 2320B	mg/L as CaCO ₃	29.9	128	127	222	400 J	<100 Y	211	<12000	<6000	<6000	<6000
Alkalinity, Carbonate (CaCO3)	SM 2320B	mg/L as CaCO ₃	<20.0	<20.0	<20.0	<20.0	2,500	2,930	<20.0	271,000	257,000	260,000	233,000
Alkalinity, Hydroxide (CaCO3)	SM 2320B	mg/L as CaCO ₃	<20.0	<20.0	<20.0	<20.0	<600	150	<20.0	<12000	3510 J	3470 J	6,620
Alkalinity, Total as CaCO3	SM 2320B	mg/L as CaCO ₃	29.9	128	127	222	2,900	3,080	211	272,000	260,000	264,000	239,000
Bromide	EPA 300.0	mg/L	0.14 J	<1.0	<1.0	0.28 J	<1.0	0.95 J	0.28 J	<1.0	NA*	NA*	NA*
Chloride	EPA 300.0	mg/L	<1.0	1.2	1.1	0.85 J	4.1	4.7	1.1	3150	NA*	NA*	NA*
Fluoride	EPA 300.0	mg/L	3.2	2.6	2.2	2.6	1.6	2.2	2.2	<2.0 Y	NA*	NA*	NA*
Sulfate	EPA 300.0	mg/L	949	936	846	835	426	623	859	<1.0	NA*	NA*	NA*

Notes

Samples are from the 517 Shaft (517SHAFT) and from injected solutions (517INJECT).

Depth of samples from the 517 Shaft are measured from the shaft collar. Water surface is at about 465 feet (noted as 463 feet for the May 16, 2013 sample).

Sample depth is noted in Sample ID as the 3 digits after "517SHAFT"

Abbreviations

CaCO₃ = calcium carbonate

J = Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

mg/L = milligrams per liter

NA = not analyzed

Y = Dissolved result is greater than the total. Data is within laboratory control limits.

µg/L = micrograms per liter

TABLE A-3
DR-3A WATER QUALITY DATA
2012 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

Date & Time	Elapsed Time (days)	Temperature (°C)	Specific Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	pH
9/26/2012 18:00	0.14	19.1	1028	5.83	6.58
9/26/2012 20:00	0.22	19	1065	5.77	6.58
9/26/2012 22:00	0.30	19	1063	5.77	6.58
9/27/2012 11:55	0.88	18.77	1245	5.81	6.71
9/27/2012 13:55	0.97	18.76	1244	5.76	6.71
9/27/2012 15:55	1.05	18.77	1244	5.76	6.71
9/27/2012 17:55	1.13	18.73	1244	5.77	6.72
9/27/2012 19:55	1.22	18.72	1244	5.76	6.72
9/27/2012 21:55	1.30	18.65	1244	5.76	6.72
9/27/2012 23:55	1.38	18.65	1244	5.76	6.72
9/28/2012 1:55	1.47	18.61	1244	5.76	6.72
9/28/2012 3:55	1.55	18.66	1244	5.72	6.72
9/28/2012 5:55	1.63	18.64	1244	5.74	6.73
9/28/2012 7:55	1.72	18.65	1245	5.74	6.73
9/28/2012 9:55	1.80	18.74	1245	5.71	6.73
9/28/2012 11:55	1.88	18.82	1247	5.69	6.73
9/28/2012 13:55	1.97	18.8	1251	5.77	6.71
9/28/2012 15:55	2.05	18.75	1252	5.76	6.72
9/28/2012 17:55	2.13	18.73	1253	5.77	6.72
9/28/2012 19:55	2.22	18.87	1253	5.78	6.73
9/28/2012 21:55	2.30	18.85	1253	5.77	6.73
9/28/2012 23:55	2.38	18.61	1254	5.75	6.73
9/29/2012 1:55	2.47	18.64	1254	5.71	6.73
9/29/2012 3:55	2.55	18.83	1255	5.7	6.73
9/29/2012 5:55	2.63	18.7	1253	5.65	6.74
9/29/2012 7:55	2.72	18.71	1254	5.68	6.74
9/29/2012 9:55	2.80	18.77	1254	5.67	6.74
9/29/2012 11:55	2.88	18.87	1256	5.67	6.74
9/29/2012 13:55	2.97	18.88	1257	5.63	6.74
9/29/2012 15:55	3.05	18.8	1257	5.66	6.75
9/29/2012 17:55	3.13	18.72	1259	5.67	6.75
9/29/2012 19:55	3.22	18.7	1259	5.68	6.75
9/29/2012 21:55	3.30	18.69	1259	5.67	6.75
9/29/2012 23:55	3.38	18.66	1259	5.67	6.75
9/30/2012 1:55	3.47	18.74	1258	5.61	6.75
9/30/2012 3:55	3.55	18.72	1259	5.6	6.75
9/30/2012 5:55	3.63	18.71	1259	5.62	6.76
9/30/2012 7:55	3.72	18.73	1259	5.6	6.76
9/30/2012 12:00	3.89	18.83	1261	5.6	6.76
9/30/2012 14:00	3.97	18.78	1261	5.58	6.76
9/30/2012 16:07	4.06	18.75	1263	5.82	6.7
9/30/2012 18:07	4.14	18.73	1262	5.81	6.74
9/30/2012 20:07	4.22	18.71	1262	5.82	6.75
9/30/2012 22:07	4.31	18.73	1262	5.8	6.75
10/1/2012 0:07	4.39	18.72	1262	5.78	6.75
10/1/2012 2:07	4.47	18.72	1262	5.74	6.75
10/1/2012 4:07	4.56	18.73	1262	5.74	6.75
10/1/2012 6:07	4.64	18.73	1262	5.75	6.75
10/1/2012 8:07	4.72	18.73	1262	5.77	6.75
10/1/2012 10:07	4.81	18.79	1262	5.75	6.75
10/1/2012 12:07	4.89	18.86	1263	5.74	6.75

TABLE A-3
DR-3A WATER QUALITY DATA
2012 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

Date & Time	Elapsed Time (days)	Temperature (°C)	Specific Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	pH
10/1/2012 13:54	4.96	18.84	1263	5.75	6.75
10/1/2012 15:54	5.05	18.79	1264	5.76	6.76
10/1/2012 17:54	5.13	18.74	1263	5.78	6.76
10/1/2012 19:54	5.21	18.72	1263	5.78	6.76
10/1/2012 21:54	5.30	18.69	1263	5.79	6.76
10/1/2012 23:54	5.38	18.65	1263	5.76	6.76
10/2/2012 1:54	5.46	18.63	1263	5.75	6.76
10/2/2012 3:54	5.55	18.62	1263	5.73	6.75
10/2/2012 5:54	5.63	18.72	1263	5.68	6.75
10/2/2012 7:54	5.71	18.72	1264	5.65	6.75
10/2/2012 9:54	5.80	18.79	1264	5.64	6.75
10/2/2012 11:54	5.88	18.86	1265	5.61	6.75
10/2/2012 14:02	5.97	18.83	1266	5.61	6.75
10/2/2012 16:02	6.05	18.78	1267	5.63	6.75
10/2/2012 17:55	6.13	18.74	1267	5.63	6.75
10/2/2012 19:55	6.22	18.77	1267	5.6	6.74
10/2/2012 21:55	6.30	18.68	1267	5.63	6.75
10/2/2012 23:55	6.38	18.67	1266	5.61	6.74
10/3/2012 1:55	6.47	18.69	1267	5.58	6.74
10/3/2012 3:55	6.55	18.68	1267	5.58	6.74
10/3/2012 5:55	6.63	18.71	1267	5.58	6.74
10/3/2012 7:55	6.72	18.73	1267	5.55	6.74
10/3/2012 9:55	6.80	18.78	1267	5.55	6.73
10/3/2012 11:55	6.88	18.86	1267	5.53	6.74
10/3/2012 13:40	6.95	18.82	1268	5.53	6.74
10/3/2012 15:56	7.05	18.73	1245	5.66	6.69
10/3/2012 17:56	7.13	18.72	1245	5.63	6.71
10/3/2012 19:56	7.22	18.74	1245	5.61	6.71
10/3/2012 21:56	7.30	18.74	1245	5.61	6.71
10/3/2012 23:56	7.38	18.66	1245	5.63	6.71
10/4/2012 1:56	7.47	18.7	1245	5.62	6.71
10/4/2012 3:56	7.55	18.67	1245	5.64	6.71
10/4/2012 5:56	7.63	18.7	1244	5.64	6.71
10/4/2012 7:56	7.72	18.71	1244	5.63	6.71
10/4/2012 9:56	7.80	18.77	1244	5.62	6.71
10/4/2012 11:56	7.88	18.79	1245	5.63	6.72
10/4/2012 13:56	7.97	18.79	1245	5.63	6.72
10/4/2012 15:56	8.05	18.75	1245	5.62	6.72
10/4/2012 17:56	8.13	18.74	1245	5.63	6.71
10/4/2012 19:56	8.22	18.74	1245	5.62	6.71
10/4/2012 21:56	8.30	18.74	1245	5.61	6.71
10/4/2012 23:56	8.38	18.74	1245	5.59	6.71
10/5/2012 1:56	8.47	18.71	1245	5.58	6.71
10/5/2012 3:56	8.55	18.69	1246	5.56	6.71
10/5/2012 5:56	8.63	18.7	1245	5.56	6.7
10/5/2012 7:56	8.72	18.67	1245	5.57	6.7
10/5/2012 10:00	8.80	18.74	1246	5.59	6.69
10/5/2012 12:00	8.89	18.75	1249	5.6	6.68
10/5/2012 15:00	9.01	NM	NM	NM	NM
10/5/2012 17:56	9.13	18.73	1342	5.93	6.65
10/5/2012 20:56	9.26	18.73	1341	5.91	6.66

TABLE A-3
DR-3A WATER QUALITY DATA
2012 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

Date & Time	Elapsed Time (days)	Temperature (°C)	Specific Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	pH
10/5/2012 23:56	9.38	18.73	1341	5.89	6.66
10/6/2012 2:56	9.51	18.71	1341	5.88	6.66
10/6/2012 5:56	9.63	18.7	1341	5.86	6.66
10/6/2012 8:56	9.76	18.74	1342	5.85	6.66
10/6/2012 11:56	9.88	18.72	1343	5.87	6.66
10/6/2012 14:53	10.01	18.72	1344	5.96	6.66
10/6/2012 17:53	10.13	18.65	1344	5.8	6.66
10/6/2012 20:53	10.26	18.62	1343	5.86	6.66
10/6/2012 23:53	10.38	18.58	1344	5.84	6.66
10/7/2012 2:53	10.51	18.51	1344	5.85	6.66
10/7/2012 5:53	10.63	18.53	1344	5.82	6.66
10/7/2012 8:53	10.76	18.61	1354	5.77	6.66
10/7/2012 11:53	10.88	18.67	1364	5.81	6.67
10/7/2012 14:53	11.01	18.71	1369	5.74	6.67
10/7/2012 17:53	11.13	18.64	1372	5.74	6.67
10/7/2012 20:53	11.26	18.59	1375	5.76	6.68
10/7/2012 23:53	11.38	18.58	1377	5.74	6.68
10/8/2012 2:53	11.51	18.57	1380	5.74	6.68
10/8/2012 5:53	11.63	18.57	1382	5.78	6.69
10/8/2012 8:53	11.76	18.61	1384	5.77	6.7
10/8/2012 11:53	11.88	18.63	1389	5.82	6.7
10/8/2012 15:03	12.01	18.63	1395	5.86	6.71
10/8/2012 18:02	12.14	18.62	1343	5.79	6.72
10/8/2012 21:02	12.26	18.56	1347	5.79	6.77
10/9/2012 0:02	12.39	18.53	1350	5.75	6.78
10/9/2012 3:02	12.51	18.54	1352	5.73	6.78
10/9/2012 6:02	12.64	18.55	1353	5.73	6.78
10/9/2012 9:02	12.76	18.62	1354	5.69	6.77
10/9/2012 11:55	12.88	18.71	1355	5.74	6.78
10/9/2012 14:55	13.01	18.69	1356	5.69	6.78
10/9/2012 17:55	13.13	18.64	1357	5.72	6.78
10/9/2012 20:55	13.26	18.58	1357	5.72	6.78
10/9/2012 23:55	13.38	18.56	1356	5.69	6.78
10/10/2012 2:55	13.51	18.54	1357	5.67	6.78
10/10/2012 5:55	13.63	18.58	1356	5.68	6.78
10/10/2012 8:55	13.76	18.61	1355	5.7	6.79
10/10/2012 12:31	13.91	18.71	1357	5.82	6.77
10/10/2012 15:01	14.01	18.67	1356	5.78	6.75
10/10/2012 18:01	14.14	18.66	1356	5.74	6.75
10/10/2012 21:01	14.26	18.57	1355	5.74	6.75
10/11/2012 0:01	14.39	18.57	1354	5.68	6.74
10/11/2012 3:01	14.51	18.57	1354	5.63	6.75
10/11/2012 6:01	14.64	18.59	1353	5.6	6.75
10/11/2012 9:01	14.76	18.62	1352	5.57	6.76
10/11/2012 12:01	14.89	18.73	1352	5.54	6.76
10/11/2012 15:01	15.01	18.67	1353	5.51	6.76
10/11/2012 17:56	15.13	18.62	1347	6.29	6.76
10/11/2012 20:56	15.26	18.64	1340	6.26	6.77
10/11/2012 23:56	15.38	18.6	1339	6.18	6.77
10/12/2012 2:56	15.51	18.64	1337	6.1	6.77
10/12/2012 5:56	15.63	18.67	1335	6.12	6.78

TABLE A-3
DR-3A WATER QUALITY DATA
2012 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

Date & Time	Elapsed Time (days)	Temperature (°C)	Specific Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	pH
10/12/2012 8:56	15.76	18.67	1334	6.06	6.77
10/12/2012 12:02	15.89	18.51	1321	6.53	6.77
10/12/2012 15:02	16.01	18.58	1333	6.03	6.78
10/12/2012 18:02	16.14	18.59	1332	5.97	6.77
10/12/2012 21:02	16.26	18.6	1331	5.9	6.76
10/13/2012 0:02	16.39	18.61	1332	5.85	6.76
10/13/2012 3:02	16.51	18.6	1332	5.82	6.76
10/13/2012 6:02	16.64	18.61	1332	5.76	6.76
10/13/2012 9:02	16.76	18.59	1331	5.75	6.76
10/13/2012 12:07	16.89	18.6	1341	5.67	6.88
10/13/2012 15:07	17.02	18.58	1341	5.59	6.96
10/13/2012 18:07	17.14	18.58	1340	5.61	6.96
10/13/2012 21:07	17.27	18.58	1340	5.6	6.97
10/14/2012 0:07	17.39	18.55	1339	5.61	6.97
10/14/2012 3:07	17.52	18.57	1340	5.62	6.97
10/14/2012 6:07	17.64	18.52	1348	5.69	6.99
10/14/2012 9:07	17.77	18.57	1351	5.65	6.99
10/14/2012 12:07	17.89	18.67	1352	5.74	6.99
10/14/2012 15:07	18.02	18.63	1354	5.76	7.01
10/14/2012 18:07	18.14	18.61	1354	5.78	7.01
10/14/2012 21:07	18.27	18.52	1351	5.78	7.01
10/15/2012 0:07	18.39	18.53	1348	5.73	7
10/15/2012 3:07	18.52	18.53	1349	5.7	7
10/15/2012 6:07	18.64	18.46	1352	5.74	7.01
10/15/2012 9:07	18.77	18.55	1354	5.68	7.01
10/15/2012 12:04	18.89	18.65	1356	5.66	7.01
10/15/2012 15:04	19.01	18.63	1360	5.63	7.01
10/15/2012 18:04	19.14	18.57	1369	5.65	6.97
10/15/2012 21:04	19.26	18.45	1363	5.65	6.98
10/16/2012 0:04	19.39	18.54	1359	5.54	6.98
10/16/2012 3:04	19.51	18.55	1357	5.5	6.98
10/16/2012 6:04	19.64	18.56	1356	5.47	6.98
10/16/2012 9:04	19.76	18.57	1354	5.4	6.98
10/16/2012 11:56	19.88	18.64	1341	5.58	6.8
10/16/2012 14:56	20.01	18.65	1341	5.46	6.81
10/16/2012 17:56	20.13	18.59	1341	5.44	6.82
10/16/2012 20:56	20.26	18.52	1340	5.43	6.82
10/16/2012 23:56	20.38	18.51	1337	5.38	6.81
10/17/2012 2:56	20.51	18.57	1337	5.32	6.81
10/17/2012 5:56	20.63	18.5	1339	5.34	6.81
10/17/2012 8:56	20.76	18.47	1340	5.31	6.81
10/17/2012 11:56	20.88	18.48	1340	5.32	6.81
10/17/2012 14:56	21.01	18.44	1340	5.31	6.81
10/17/2012 17:56	21.13	18.48	1339	5.25	6.81
10/17/2012 20:56	21.26	18.48	1338	5.25	6.81
10/17/2012 23:56	21.38	18.49	1340	5.22	6.81
10/18/2012 2:56	21.51	18.46	1342	5.24	6.82
10/18/2012 5:56	21.63	18.29	1345	5.33	6.84
10/18/2012 8:56	21.76	18.43	1347	5.24	6.83
10/18/2012 11:47	21.88	7.03	31	13.2	6.97
10/18/2012 14:59	22.01	18.42	1364	5.96	6.84

TABLE A-3
DR-3A WATER QUALITY DATA
2012 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

Date & Time	Elapsed Time (days)	Temperature (°C)	Specific Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	pH
10/18/2012 17:59	22.14	18.37	1365	5.95	6.85
10/18/2012 20:59	22.26	18.38	1363	5.92	6.84
10/18/2012 23:59	22.39	18.38	1370	5.89	6.85
10/19/2012 2:59	22.51	18.39	1372	5.88	6.86
10/19/2012 5:59	22.64	18.38	1372	5.89	6.86
10/19/2012 8:59	22.76	18.37	1372	5.84	6.86
10/19/2012 12:00	22.89	NM	NM	NM	NM
10/19/2012 15:01	23.01	18.49	1372	6.07	6.88
10/19/2012 17:54	23.13	18.43	1370	6.11	6.98
10/19/2012 20:54	23.26	18.33	1369	6.1	6.9
10/19/2012 23:54	23.38	18.33	1367	6.06	6.89
10/20/2012 2:54	23.51	18.36	1367	6	6.88
10/20/2012 5:54	23.63	18.28	1365	6.03	6.89
10/20/2012 8:54	23.76	18.4	1362	5.94	6.87
10/20/2012 12:00	23.89	18.45	1360	5.97	6.87
10/20/2012 15:00	24.01	18.44	1359	5.91	6.87
10/20/2012 18:00	24.14	18.45	1357	5.9	6.86
10/20/2012 21:00	24.26	18.35	1355	5.91	6.86
10/21/2012 0:00	24.39	18.37	1353	5.86	6.85
10/21/2012 3:00	24.51	18.4	1352	5.82	6.84
10/21/2012 6:00	24.64	18.42	1351	5.78	6.84
10/21/2012 9:00	24.76	18.42	1349	5.8	6.84
10/21/2012 12:03	24.89	18.48	1348	5.82	6.84
10/21/2012 15:03	25.01	18.45	1347	5.81	6.84
10/21/2012 18:03	25.14	18.48	1345	5.8	6.83
10/21/2012 21:03	25.26	18.41	1343	5.82	6.83
10/22/2012 0:03	25.39	18.42	1341	5.78	6.83
10/22/2012 3:03	25.51	18.43	1341	5.75	6.82
10/22/2012 6:03	25.64	18.43	1340	5.76	6.83
10/22/2012 9:03	25.76	18.43	1339	5.76	6.83
10/22/2012 12:03	25.89	18.47	1340	5.81	6.83
10/22/2012 15:00	26.01	NM	NM	NM	NM
10/22/2012 17:53	26.13	18.44	1337	5.85	6.72
10/22/2012 20:53	26.26	18.44	1337	5.81	6.73
10/22/2012 23:53	26.38	18.44	1336	5.77	6.72
10/23/2012 2:53	26.51	18.45	1335	5.76	6.72
10/23/2012 5:53	26.63	18.44	1335	5.79	6.73
10/23/2012 8:53	26.76	18.44	1335	5.81	6.73
10/23/2012 23:59	27.39	18.93	1342	5.62	6.88
10/24/2012 5:59	27.64	18.9	1345	5.78	6.87
10/24/2012 12:30	27.91	18.91	1345	5.41	6.96
10/24/2012 18:00	28.14	18.85	1346	5.54	6.89
10/25/2012 0:00	28.39	18.87	1346	5.75	6.87
10/25/2012 6:00	28.64	18.79	1350	5.8	6.87
10/25/2012 12:00	28.89	18.37	1400	5.96	6.89
10/25/2012 18:00	29.14	18.33	1398	5.78	6.93
10/26/2012 0:00	29.39	18.31	1396	5.71	6.92
10/26/2012 6:00	29.64	18.31	1396	5.73	6.93
10/26/2012 12:00	29.89	18.43	1395	5.78	6.93
10/26/2012 18:00	30.14	18.39	1396	5.83	6.94
10/27/2012 0:00	30.39	18.32	1394	5.78	6.93

TABLE A-3
DR-3A WATER QUALITY DATA
2012 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

Date & Time	Elapsed Time (days)	Temperature (°C)	Specific Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	pH
10/27/2012 6:00	30.64	18.73	1373	3.78	6.93
10/27/2012 12:04	30.89	18.42	1336	5.77	6.97
10/27/2012 18:04	31.14	18.38	1337	5.69	6.97
10/28/2012 0:04	31.39	18.42	1336	5.62	6.96
10/28/2012 6:04	31.64	18.4	1334	5.63	6.96
10/28/2012 12:04	31.89	18.45	1332	5.68	6.97
10/28/2012 18:04	32.14	18.46	1332	5.65	6.96
10/29/2012 0:04	32.39	18.37	1330	5.65	6.96
10/29/2012 6:04	32.64	18.41	1329	5.64	6.96
10/29/2012 12:04	32.89	18.53	1329	5.7	6.96
10/29/2012 18:00	33.14	NM	NM	NM	NM
10/30/2012 0:00	33.39	NM	NM	NM	NM
10/30/2012 6:00	33.64	NM	NM	NM	NM
10/30/2012 12:01	33.89	18.56	1315	5.98	6.87
10/30/2012 18:06	34.14	18.45	1310	5.78	6.93
10/31/2012 0:06	34.39	18.35	1303	5.75	6.93
10/31/2012 6:06	34.64	18.35	1310	5.75	6.93
10/31/2012 12:04	34.89	18.48	1310	5.73	6.93
10/31/2012 18:04	35.14	18.45	1311	5.71	6.92
11/1/2012 0:04	35.39	18.35	1309	5.72	6.92
11/1/2012 6:04	35.64	18.39	1309	5.69	6.92
11/1/2012 11:58	35.88	18.47	1310	5.7	6.92
11/1/2012 17:58	36.13	18.48	1310	5.61	6.92
11/1/2012 23:58	36.38	18.41	1304	5.6	6.91
11/2/2012 5:58	36.63	18.44	1308	5.56	6.91
11/2/2012 12:06	36.89	18.52	1307	5.55	6.9
11/2/2012 18:06	37.14	18.48	1305	5.52	6.9
11/3/2012 0:06	37.39	18.4	1303	5.54	6.9
11/3/2012 6:06	37.64	18.42	1299	5.55	6.9
11/3/2012 12:00	37.89	NM	NM	NM	NM
11/3/2012 18:02	38.14	18.48	1310	5.93	6.97
11/4/2012 0:02	38.39	18.39	1308	5.94	6.96
11/4/2012 6:02	38.64	18.42	1305	5.94	6.96
11/4/2012 12:02	38.89	18.58	1301	5.92	6.96
11/4/2012 18:04	39.14	18.53	1297	5.92	6.95
11/5/2012 0:04	39.39	18.54	1298	5.89	6.95
11/5/2012 6:04	39.64	18.47	1297	5.91	6.95
11/5/2012 12:00	39.89	18.6	1293	5.89	6.94
11/5/2012 17:52	40.13	18.6	1305	5.76	7.05
11/5/2012 23:52	40.38	18.42	1307	5.76	7.06
11/6/2012 5:52	40.63	18.52	1307	5.71	7.05
11/6/2012 12:00	40.89	18.68	1304	5.62	7.04
11/6/2012 18:00	41.14	18.58	1305	5.61	7.04
11/7/2012 0:00	41.39	18.5	1309	5.59	7.03
11/7/2012 6:00	41.64	18.51	1304	5.53	7.03
11/7/2012 12:00	41.89	18.71	1302	5.43	7.02
11/7/2012 18:00	42.14	18.59	1306	5.41	7.02
11/8/2012 0:00	42.39	18.51	1306	5.35	7.01
11/8/2012 6:00	42.64	18.57	1305	5.27	7
11/8/2012 12:01	42.89	18.58	1278	5.7	7.01
11/8/2012 18:00	43.14	18.56	1279	5.62	7.01

TABLE A-3
DR-3A WATER QUALITY DATA
2012 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

Date & Time	Elapsed Time (days)	Temperature (°C)	Specific Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	pH
11/9/2012 0:00	43.39	18.59	1276	5.5	7
11/9/2012 6:00	43.64	18.61	1275	5.42	7
11/9/2012 12:00	43.89	18.64	1274	5.35	6.99
11/9/2012 18:03	44.14	18.62	1301	5.15	6.89
11/10/2012 0:03	44.39	18.56	1300	5.07	6.87
11/10/2012 6:03	44.64	18.6	1298	4.96	6.84
11/10/2012 12:03	44.89	18.57	1298	4.89	6.82
11/10/2012 18:03	45.14	18.58	1297	4.83	6.81
11/11/2012 0:03	45.39	18.58	1297	4.76	6.8
11/11/2012 6:03	45.64	18.59	1296	4.72	6.8
11/11/2012 12:03	45.89	18.55	1297	4.7	6.79
11/11/2012 18:03	46.14	18.54	1297	4.69	6.81
11/12/2012 0:03	46.39	18.33	1296	4.77	6.83
11/12/2012 6:03	46.64	18.52	1295	4.72	6.84
11/12/2012 11:59	46.89	19.29	1271	5.61	6.84
11/12/2012 17:59	47.14	19.24	1271	5.57	6.84
11/12/2012 23:59	47.39	19.19	1273	5.53	6.84
11/13/2012 5:59	47.64	19.11	1275	5.55	6.85

Notes:

Start Time for the 2012 injection test was 14:45 on 9/26/2012

Data in this table correspond to water quality parameters measured when DR-3A samples were collected.

Abbreviations:

°C - degrees Centigrade

d - days

mg/L - milligrams per liter

NM - not measured.

µS/cm - microSiemens per centimeter

TABLE A-4
DR-3A ANALYTICAL DATA
2012 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

Parameter	Sample ID		DR3A1209261200	DR3A1209261800	DR3A1209270000	DR3A1209271000	DR3A1209271800	DR3A1209280200	DR3A1209281000	DR3A1209281800	DR3A1209290200	DR3A1209291000
	Sample Date & Time		9/26/2012 12:00	9/26/2012 18:00	9/27/2012 0:00	9/27/2012 10:00	9/27/2012 18:00	9/28/2012 2:00	9/28/2012 10:00	9/28/2012 18:00	9/29/2012 2:00	9/29/2012 10:00
	Method	Units										
Metals												
Aluminum	EPA 200.7	ug/L	--	--	--	--	--	--	--	--	--	--
Aluminum, Dissolved	EPA 200.7	ug/L	--	--	--	--	--	--	--	--	--	--
Arsenic	EPA 200.8	ug/L	0.35 J	0.41 J	0.35 J	0.42 J	0.32 J	0.46 J	0.63 J	0.60 J	0.63 J	0.64 J
Arsenic, Dissolved	EPA 200.8	ug/L	0.18 J	<1.0	<1.0	0.26 J	<1.0	0.21 J	<1.0	0.17 J	<1.0	<1.0
Cadmium	EPA 200.8	ug/L	22.4	23.7	23.4	23.8	23.2	22.8	21.8	22.5	21.8	21.2
Cadmium, Dissolved	EPA 200.8	ug/L	21.7	22.8	19.9	20.7	20.6	20.4	21.0	19.2	21.2	20.5
Calcium	EPA 200.7	ug/L	224,000	224,000	218,000	233,000	233,000	233,000	230,000	229,000	232,000	227,000
Calcium, Dissolved	EPA 200.7	ug/L	225,000	223,000	230,000	230,000	235,000	231,000	234,000	227,000	229,000	234,000
Chromium	EPA 200.8	ug/L	0.77 J	0.32 J	0.82 J	0.41 J	0.48 J	0.45 J	<1.0	<1.0	0.17 J	0.20 J
Chromium, Dissolved	EPA 200.8	ug/L	0.23 J	0.49 J	0.14 J	0.23 J	0.17 J	0.16 J	1.0 Y	0.60 JY	0.75 JY	0.72 JY
Cobalt	EPA 200.8	ug/L	3.2	3.4	3.3	3.3	3.3	3.1	3.1	2.9	2.9	2.9
Cobalt, Dissolved	EPA 200.8	ug/L	3.0	3.1	2.8	2.7	2.7	2.6	3.2	2.8	3.1	3.0
Copper	EPA 200.8	ug/L	47.7	39.5	42.1	46.7	43.7	43.2	29.9	43.8	42.6	41.4
Copper, Dissolved	EPA 200.8	ug/L	8.6 Y	3.4 Y	4.2 Y	10.5 Y	3.9 Y	3.3 Y	5.2	3.8 Y	4.4 Y	4.2 Y
Iron	EPA 200.7/200.8	ug/L	3,750	2,930	3,110	3,690	3,610	3,650	2,450	3,700	3,810	3,700
Iron, Dissolved	EPA 200.7/200.8	ug/L	1,020	<50.0	<50.0	263	118	<50.0	<50.0	<50.0	26.5 J	23.2 J
Lead	EPA 200.8	ug/L	2.0 Y	1.6 Y	1.8 Y	1.9 Y	2.4 Y	1.9 Y	1.0	1.5	1.5	1.5
Lead, Dissolved	EPA 200.8	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.22 JY	0.17 JY	0.18 JY	0.15 JY
Lithium, Dissolved	EPA 200.8	ug/L	29.0	29.9	29.0	118.R	23.0	24.7	28.2	30.4	36.2	41.4
Magnesium	EPA 200.7	ug/L	18,700	18,900	18,300	19,000	19,200	19,100	19,600	19,800	20,000	19,800
Magnesium, Dissolved	EPA 200.7	ug/L	19,000	19,000	19,300	19,000	19,300	19,400	20,000	19,700	19,800	20,500
Manganese	EPA 200.8	ug/L	2,160	2,330	2,270	2,300	2,240	2,220	2,180	2,150	2,090	2,040
Manganese, Dissolved	EPA 200.8	ug/L	2,110	2,380	2,110	2,110	2,130	2,110	411	1,980	2,010	2,040
Mercury	EPA 245.1	ug/L	<0.20	<0.20	<0.20	--	--	--	--	--	--	--
Nickel	EPA 200.8	ug/L	4.5	5.3	5.2	5.0	5.2	4.8	3.0	3.8	3.7	3.6
Nickel, Dissolved	EPA 200.8	ug/L	3.7	4.4	4.0	4.0	4.3	4.1	4.5	4.3	4.5	4.6
Potassium	EPA 200.7	ug/L	1,720	1,690	1,630	1,660	1,570	1,760	3,280	3,940	4,920	6,190
Potassium, Dissolved	EPA 200.7	ug/L	1,770	1,700	1,770	1,750	1,800	1,810	3,100	3,920	4,930	6,330
Selenium	EPA 200.8	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Selenium, Dissolved	EPA 200.8	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Silicon	EPA 200.7	ug/L	--	--	--	--	--	--	--	--	--	--
Silicon, Dissolved	EPA 200.7	ug/L	--	--	--	--	--	--	--	--	--	--
Sodium	EPA 200.7	ug/L	11,500	11,500	11,300	11,100	11,300	11,200	11,300	11,300	11,200	11,100
Sodium, Dissolved	EPA 200.7	ug/L	11,700	11,600	12,100	11,100	11,300	11,000	11,500	11,200	11,400	11,400
Zinc	EPA 200.8	ug/L	4,320	4,610	4,510	4,610	4,470	4,360	4,270	4,310	4,200	4,010
Zinc, Dissolved	EPA 200.8	ug/L	4,060	4,490	3,920	3,980	3,940	3,950	4,050	3,690	4,060	3,900
General Chemicals												
Alkalinity, Bicarbonate (CaCO3)	SM 2320B	mg/L	90.2	89.1	90.0	88.4	89.9	89.4	92.6	89.4	89.7	90.6
Alkalinity, Carbonate (CaCO3)	SM 2320B	mg/L	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
Alkalinity, Hydroxide (CaCO3)	SM 2320B	mg/L	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
Alkalinity, Total as CaCO3	SM 2320B	mg/L	90.2	89.1	90.0	88.4	89.9	89.4	92.6	89.4	89.7	90.6
Bromide	EPA 300.0	mg/L	0.15 J	0.25 J	0.16 J	0.15 J	0.14 J	<1.0	0.15 J	0.23 J	0.12 J	0.12 J
Chloride	EPA 300.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoride	EPA 300.0	mg/L	2.3	2.2	2.2	2.3	2.2	2.2	2.2 Y	2.1	2.2	2.2
Sulfate	EPA 300.0	mg/L	615	617	626	634	616	648	648	654	620	654

TABLE A-4
DR-3A ANALYTICAL DATA
2012 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

Parameter	Sample ID		DR3A1209291800	DR3A1209300200	DR3A1209301200	DR3A1209301800	DR3A1210010200	DR3A1210011000	DR3A1210011800	DR3A1210020200	DR3A1210020400	DR3A1210021000
	Sample Date & Time	Units	9/29/2012 18:00	9/30/2012 2:00	9/30/2012 12:00	9/30/2012 18:00	10/1/2012 2:00	10/1/2012 10:00	10/1/2012 18:00	10/2/2012 2:00	10/2/2012 4:00	10/2/2012 10:00
Metals												
Aluminum	EPA 200.7	ug/L	--	--	--	--	--	--	--	--	--	--
Aluminum, Dissolved	EPA 200.7	ug/L	--	--	--	--	--	--	--	--	--	--
Arsenic	EPA 200.8	ug/L	0.66 J	0.62 J	0.54 J	0.56 J	0.55 J	0.71 JY	0.68 JY	0.71 JY	0.70 JY	0.72 JY
Arsenic, Dissolved	EPA 200.8	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	0.40 JY	0.56 JY	0.49 JY	0.51 JY	0.47 JY
Cadmium	EPA 200.8	ug/L	20.6	21.7	19.1	21.7	20.0	19.2	21.3	21.0	20.6	20.9
Cadmium, Dissolved	EPA 200.8	ug/L	20.9	19.4	19.5	19.1	19.2	18.6	20.5	20.1	20.0	19.8
Calcium	EPA 200.7	ug/L	222,000	232,000	232,000	230,000	230,000	239,000	232,000	232,000	228,000	230,000
Calcium, Dissolved	EPA 200.7	ug/L	232,000	233,000	229,000	241,000	240,000	228,000	229,000	223,000	225,000	221,000
Chromium	EPA 200.8	ug/L	<1.0	<1.0	<1.0	0.20 J	<1.0	0.58 J	0.42 J	0.34 J	0.62 J	0.57 J
Chromium, Dissolved	EPA 200.8	ug/L	0.54 JY	0.48 JY	0.91 JY	0.52 JY	1.3 Y	0.76 JY	0.66 JY	0.56 JY	0.50 JY	1.2 Y
Cobalt	EPA 200.8	ug/L	2.8	3.0	2.5	3.0	2.7	3.0 Y	3.2 Y	3.3 Y	3.1 Y	3.2 Y
Cobalt, Dissolved	EPA 200.8	ug/L	3.1	2.9	2.9	2.9	3.0	3.0 Y	3.3 Y	3.3 Y	3.1 Y	3.2 Y
Copper	EPA 200.8	ug/L	39.9	41.8	35.9	41.0	37.0	37.1	36.5	39.1	40.9	41.2
Copper, Dissolved	EPA 200.8	ug/L	4.0 Y	3.8 Y	5.0 Y	3.8 Y	3.7 Y	3.9	3.7	3.7	3.8	5.1
Iron	EPA 200.7/200.8	ug/L	3,530	3,740	3,640	3,620	3,640	3,770	3,110	3,350	3,580	3,700
Iron, Dissolved	EPA 200.7/200.8	ug/L	<50.0	30.9 J	236	<50.0	22.9 J	51.1	<50.0	<50.0	19.4 J	326
Lead	EPA 200.8	ug/L	1.3	1.5	1.2	1.4	1.3	1.8 Y	1.6 Y	1.7 Y	1.8 Y	1.9 Y
Lead, Dissolved	EPA 200.8	ug/L	0.15 JY	0.15 JY	0.16 JY	0.15 JY	0.15 JY	0.37 JY	0.34 JY	0.34 JY	0.34 JY	0.36 JY
Lithium, Dissolved	EPA 200.8	ug/L	44.3	49.7	53.0	55.9	56.2	60.0	59.8	61.6	63.8	66.2
Magnesium	EPA 200.7	ug/L	19,300	19,900	19,900	19,800	20,000	19,800	19,000	19,100	18,900	19,100
Magnesium, Dissolved	EPA 200.7	ug/L	20,500	21,100	20,600	22,000	21,400	20,100	20,600	19,800	19,500	19,500
Manganese	EPA 200.8	ug/L	2,010	2,090	1,870	2,100	1,930	1,850	2,010	1,980	1,930	1,960
Manganese, Dissolved	EPA 200.8	ug/L	2,040	2,000	1,980	1,950	2,060	1,960	2,160	2,110	2,090	2,050
Mercury	EPA 245.1	ug/L	--	--	--	--	--	--	--	--	--	--
Nickel	EPA 200.8	ug/L	3.4	3.3	2.9	3.9	3.0	4.3	4.4	4.1	4.4	4.1
Nickel, Dissolved	EPA 200.8	ug/L	4.6	4.3	4.6	4.7	4.7	3.4 Y	4.0 Y	4.0 Y	3.9 Y	4.3 Y
Potassium	EPA 200.7	ug/L	7,330	8,680	10,200	11,100	11,700	11,800	12,000	12,400	12,400	13,000
Potassium, Dissolved	EPA 200.7	ug/L	7,760	8,840	10,200	11,700	12,300	12,800	13,500	13,900	13,900	14,200
Selenium	EPA 200.8	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Selenium, Dissolved	EPA 200.8	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Silicon	EPA 200.7	ug/L	--	--	--	--	--	--	--	--	--	--
Silicon, Dissolved	EPA 200.7	ug/L	--	--	--	--	--	--	--	--	--	--
Sodium	EPA 200.7	ug/L	11,000	11,500	11,400	11,300	11,400	12,200	12,000	11,800	11,700	11,800
Sodium, Dissolved	EPA 200.7	ug/L	11,600	11,500	11,400	11,800	11,700	11,700	11,800	11,600	11,600	11,300
Zinc	EPA 200.8	ug/L	3,920	4,070	3,610	4,030	3,650	3,630	4,000	4,050	3,920	3,980
Zinc, Dissolved	EPA 200.8	ug/L	3,960	3,690	3,680	3,660	3,710	3,620	3,930	3,920	3,800	3,820
General Chemicals												
Alkalinity, Bicarbonate (CaCO3)	SM 2320B	mg/L	92.7	91.2	94.8	96.4	95.5	94.5	94.9	95.4	98.4	97.2
Alkalinity, Carbonate (CaCO3)	SM 2320B	mg/L	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
Alkalinity, Hydroxide (CaCO3)	SM 2320B	mg/L	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
Alkalinity, Total as CaCO3	SM 2320B	mg/L	92.7	91.2	94.8	96.4	95.5	94.5	94.9	95.4	98.4	97.2
Bromide	EPA 300.0	mg/L	0.15 J	0.13 J	0.12 J	0.10 J	0.11 J	0.12 J	0.24 J	0.13 J	0.14 J	0.13 J
Chloride	EPA 300.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoride	EPA 300.0	mg/L	2.2	2.2	2.2	2.1	2.2	2.2	2.2	2.1	2.2	2.2
Sulfate	EPA 300.0	mg/L	652	655	648	622	646	647	642	647	650	648

TABLE A-4
DR-3A ANALYTICAL DATA
2012 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

Parameter	Sample ID		DR3A1210021800	DR3A1210030200	DR3A1210031000	DR3A1210031800	DR3A1210040200	DR3A1210041000	DR3A1210041800	DR3A1210050800	DR3A1210060900	DR3A1210070900
	Sample Date & Time		10/2/2012 18:00	10/3/2012 2:00	10/3/2012 10:00	10/3/2012 18:00	10/4/2012 2:00	10/4/2012 10:00	10/4/2012 18:00	10/5/2012 8:00	10/6/2012 9:00	10/7/2012 9:00
	Method	Units										
Metals												
Aluminum	EPA 200.7	ug/L	--	--	--	--	--	--	--	--	--	--
Aluminum, Dissolved	EPA 200.7	ug/L	--	--	--	--	--	--	--	--	--	--
Arsenic	EPA 200.8	ug/L	<10.0 Y	<10.0 Y	<10.0 Y	1.9 J	1.7 J	1.5 J	1.6 J	1.9 J	<10.0 Y	<10.0 Y
Arsenic, Dissolved	EPA 200.8	ug/L	0.44 J	0.40 J	0.44 J	1.4 J	<10.0 Y	<10.0 Y	1.5 J	1.6 JY	<10.0 Y	<10.0 Y
Cadmium	EPA 200.8	ug/L	16.1	17.7	20.0	18.4	17.6	18.2	21.9	17.6	19.8	19.5
Cadmium, Dissolved	EPA 200.8	ug/L	18.3	17.9	18.1	18.4	17.1	17.5	19.3	18.9	18.4	18.2
Calcium	EPA 200.7	ug/L	223,000	230,000	236,000	216,000	219,000	214,000	228,000	229,000	222,000	216,000
Calcium, Dissolved	EPA 200.7	ug/L	231,000	226,000	223,000	219,000	220,000	214,000	228,000	225,000	217,000	210,000
Chromium	EPA 200.8	ug/L	0.48 JY	0.42 JY	0.47 JY	0.79 J	0.27 J	2.5 J	2.6 JY	2.6 JY	<10.0 Y	<10.0 Y
Chromium, Dissolved	EPA 200.8	ug/L	0.41 J	0.35 J	0.45 J	0.32 J	0.41 J	0.33 J	2.6 JY	2.6 JY	<10.0 Y	<10.0 Y
Cobalt	EPA 200.8	ug/L	2.7	2.9	3.1	3.0	2.7	4.6 J	4.5 JY	4.8 JY	2.3 J	2.4 J
Cobalt, Dissolved	EPA 200.8	ug/L	3.0	2.9	3.0	2.9	2.8	2.7	4.5 JY	4.7 JY	2.5 J	2.4 J
Copper	EPA 200.8	ug/L	38.1	39.3	43.5	40.4	37.0	42.4	42.9	45.6	44.1	47.8
Copper, Dissolved	EPA 200.8	ug/L	3.1	3.2	5.3	4.3 Y	3.9 Y	7.1 Y	<10.0 Y	<10.0 Y	<10.0 Y	<10.0 Y
Iron	EPA 200.7/200.8	ug/L	3,560	3,550	4,020	3,560	3,640	3,710	3,750	3,920	4,160	4,230
Iron, Dissolved	EPA 200.7/200.8	ug/L	<50.0	<50.0	548	<50.0	29.4 JY	619	<50.0	173	231	377
Lead	EPA 200.8	ug/L	1.5 J	1.6 J	1.6 JY	1.9 Y	4.8 JY	4.8 JY	2.7 JY	2.7 JY	2.8 JY	2.8 JY
Lead, Dissolved	EPA 200.8	ug/L	0.074 JY	0.083 JY	0.070 JY	0.14 JY	0.15 JY	0.16 JY	3.2 JY	3.2 JY	1.2 JY	1.1 JY
Lithium, Dissolved	EPA 200.8	ug/L	68.3	72.6	73.4	74.6	77.2	75.8	74.7	81.6	89.2	129
Magnesium	EPA 200.7	ug/L	18,600	19,400	20,000	17,900	18,300	18,000	19,600	19,700	19,200	18,900
Magnesium, Dissolved	EPA 200.7	ug/L	19,800	18,700	18,800	18,500	18,200	18,200	19,800	19,600	19,100	18,800
Manganese	EPA 200.8	ug/L	1,830	1,950	1,970	2,010	1,840	2,000	1,970	1,990	1,950	1,940
Manganese, Dissolved	EPA 200.8	ug/L	2,020	2,020	2,010	2,030	1,930	1,870	1,970	1,940	1,970	1,920
Mercury	EPA 245.1	ug/L	--	--	--	--	--	--	--	--	--	--
Nickel	EPA 200.8	ug/L	3.0	3.6	3.6	4.5	3.5	4.4 J	4.8 J	4.6 J	<10.0 Y	<10.0 Y
Nickel, Dissolved	EPA 200.8	ug/L	2.8	3.0	3.3	3.4	4.1	3.4	4.3 JY	4.3 JY	<10.0 Y	<10.0 Y
Potassium	EPA 200.7	ug/L	13,200	13,900	14,600	14,300	15,100	15,200	17,200	18,000	19,700	29,100
Potassium, Dissolved	EPA 200.7	ug/L	13,600	14,000	13,800	14,600	15,100	15,100	17,400	18,000	19,900	29,800
Selenium	EPA 200.8	ug/L	<10.0 Y	<10.0 Y	<10.0 Y	<1.0	<1.0	<10.0 Y	<10.0 Y	<10.0 Y	<10.0 Y	<10.0 Y
Selenium, Dissolved	EPA 200.8	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10.0 Y	<10.0 Y	<10.0 Y	<10.0 Y
Silicon	EPA 200.7	ug/L	--	--	--	--	--	--	--	--	--	--
Silicon, Dissolved	EPA 200.7	ug/L	--	--	--	--	--	--	--	--	--	--
Sodium	EPA 200.7	ug/L	11,400	11,700	12,100	10,600	10,700	10,600	11,400	11,400	11,000	10,900
Sodium, Dissolved	EPA 200.7	ug/L	11,900	12,000	11,800	10,800	10,800	10,600	11,600	11,400	11,200	11,200
Zinc	EPA 200.8	ug/L	3,650	4,060	4,210	3,920	3,720	3,930	3,940	4,040	3,870	3,570
Zinc, Dissolved	EPA 200.8	ug/L	3,420	3,710	3,920	3,620	3,660	3,550	3,730	3,700	3,770	3,620
General Chemicals												
Alkalinity, Bicarbonate (CaCO3)	SM 2320B	mg/L	98.1	95.3	95.9	98.9	98.7	96.9	103	97.4	99.4	104
Alkalinity, Carbonate (CaCO3)	SM 2320B	mg/L	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
Alkalinity, Hydroxide (CaCO3)	SM 2320B	mg/L	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
Alkalinity, Total as CaCO3	SM 2320B	mg/L	98.1	95.3	95.9	98.9	98.7	96.9	103	97.4	99.4	104
Bromide	EPA 300.0	mg/L	0.13 J	0.14 J	0.14 J	0.23 J	0.14 J	0.14 J	<1.0	<1.0	<1.0	<1.0
Chloride	EPA 300.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.61 J
Fluoride	EPA 300.0	mg/L	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3
Sulfate	EPA 300.0	mg/L	651	642	644	642	647	642	664	633	620	620

TABLE A-4
DR-3A ANALYTICAL DATA
2012 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

Parameter	Sample ID		DR3A1210080900	DR3A1210090900	DR3A1210100900	DR3A1210110900	DR3A1210120900	DR3A1210130900	DR3A1210140900	DR3A1210150900	DR3A1210160900	DR3A1210170900
	Sample Date & Time		10/8/2012 9:00	10/9/2012 9:00	10/10/2012 9:00	10/11/2012 9:00	120/10/2012 09:00	10/13/2012 9:00	10/14/2012 9:00	10/15/2012 9:00	10/16/2012 9:00	10/17/2012 9:00
Method	Units											
Metals												
Aluminum	EPA 200.7	ug/L	--	--	--	--	--	--	--	--	224	--
Aluminum, Dissolved	EPA 200.7	ug/L	--	--	--	--	--	--	--	--	53.6 J	--
Arsenic	EPA 200.8	ug/L	<10.0 Y	<10.0 Y	<10.0 Y	<10.0 Y	<10.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y
Arsenic, Dissolved	EPA 200.8	ug/L	<10.0 Y	<10.0 Y	<10.0 Y	<10.0 Y	<10.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y
Cadmium	EPA 200.8	ug/L	17.8	15.4	14.6	15.7	15.5	17.1	15.8	15.9	15.6	16.0
Cadmium, Dissolved	EPA 200.8	ug/L	16.0	14.8	15.1	14.2	15.4	15.3	14.0	14.4	15.2	14.6
Calcium	EPA 200.7	ug/L	209,000	194,000	205,000	209,000	220,000	215,000	204,000	201,000	195,000	212,000
Calcium, Dissolved	EPA 200.7	ug/L	203,000	198,000	202,000	206,000	199,000	222,000	214,000	214,000	205,000	214,000
Chromium	EPA 200.8	ug/L	<10.0 Y	<10.0 Y	2.1 J	<10.0 Y	<10.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	0.66 J	<5.0 Y
Chromium, Dissolved	EPA 200.8	ug/L	<10.0 Y	1.1 J	1.3 J	<10.0 Y	<10.0 Y	1.0 J	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y
Cobalt	EPA 200.8	ug/L	2.4 J	2.6 J	2.6 J	2.7 J	2.6 J	2.7 J	2.8 J	2.8 J	2.5 J	2.7 J
Cobalt, Dissolved	EPA 200.8	ug/L	2.2 J	2.6 J	2.9 J	2.6 J	2.8 J	2.6 J	2.6 J	2.6 J	2.8 J	2.6 J
Copper	EPA 200.8	ug/L	42.9	38.8	37.8	41.7	37.0	41.7	39.2	49.9	36.4	41.2
Copper, Dissolved	EPA 200.8	ug/L	<10.0 Y	<10.0 Y	<10.0 Y	<10.0 Y	<10.0 Y	3.5 J	4.2 J	4.0 J	4.4 J	2.5 J
Iron	EPA 200.7/200.8	ug/L	3,750	3,490	3,600	3,830	4,000	4,170	3,550	3,440	3,710	4,320
Iron, Dissolved	EPA 200.7/200.8	ug/L	152	138	85.5	68.0	249	367	293	211	413	<500
Lead	EPA 200.8	ug/L	2.6 JY	2.9 JY	2.9 JY	1.6 JY	1.4 J	1.8 J	1.6 J	1.6 J	1.6 J	1.7 J
Lead, Dissolved	EPA 200.8	ug/L	1.1 JY	1.6 JY	1.6 JY	<10.0 Y	<10.0 Y	<5.0 Y	0.42 J	<5.0 Y	<5.0 Y	<5.0 Y
Lithium, Dissolved	EPA 200.8	ug/L	215	287	290	284	182	182	191	169	172	177
Magnesium	EPA 200.7	ug/L	18,700	18,500	18,800	17,600	18,500	18,000	17,200	17,200	16,900	19,600
Magnesium, Dissolved	EPA 200.7	ug/L	18,800	18,700	18,700	17,600	18,300	18,800	18,100	18,200	17,800	19,500
Manganese	EPA 200.8	ug/L	1,920	1,790	1,800	1,770	1,690	1,850	1,840	1,840	1,760	1,830
Manganese, Dissolved	EPA 200.8	ug/L	1,840	1,770	1,870	1,680	1,830	1,800	1,730	1,790	1,850	1,780
Mercury	EPA 245.1	ug/L	--	--	--	--	--	--	--	--	--	--
Nickel	EPA 200.8	ug/L	<10.0 Y	<10.0 Y	<10.0 Y	5.2 J	5.2 J	3.6 J	3.8 J	3.6 J	3.0 J	3.2 J
Nickel, Dissolved	EPA 200.8	ug/L	<10.0 Y	<10.0 Y	<10.0 Y	5.3 J	5.3 J	4.0 J	3.6 J	3.5 J	3.0 J	2.5 J
Potassium	EPA 200.7	ug/L	52,300	75,000	73,900	70,000	58,300	55,600	63,700	66,700	64,000	86,700
Potassium, Dissolved	EPA 200.7	ug/L	53,700	76,400	73,200	69,200	58,200	56,100	64,700	69,200	67,200	107,000
Selenium	EPA 200.8	ug/L	<10.0 Y	<10.0 Y	<10.0 Y	<10.0 Y	<10.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y
Selenium, Dissolved	EPA 200.8	ug/L	<10.0 Y	<10.0 Y	<10.0 Y	<10.0 Y	<10.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y
Silicon	EPA 200.7	ug/L	--	--	--	--	--	--	--	--	6620	--
Silicon, Dissolved	EPA 200.7	ug/L	--	--	--	--	--	--	--	--	6810	--
Sodium	EPA 200.7	ug/L	11,000	11,400	11,300	11,000	11,800	11,800	11,400	11,300	10,900	11,600
Sodium, Dissolved	EPA 200.7	ug/L	11,400	11,700	11,200	11,000	11,800	11,800	11,600	11,800	11,600	11,600
Zinc	EPA 200.8	ug/L	3,210	3,040	3,060	3,000	3,020	3,240	3,090	3,060	2,930	3,070
Zinc, Dissolved	EPA 200.8	ug/L	3,230	2,890	3,010	2,740	3,120	3,070	2,890	2,890	2,930	2,840
General Chemicals												
Alkalinity, Bicarbonate (CaCO3)	SM 2320B	mg/L	110	114	115	95.1	111	108	110	111	109	108
Alkalinity, Carbonate (CaCO3)	SM 2320B	mg/L	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
Alkalinity, Hydroxide (CaCO3)	SM 2320B	mg/L	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
Alkalinity, Total as CaCO3	SM 2320B	mg/L	110	114	115	95.1	111	108	110	111	109	108
Bromide	EPA 300.0	mg/L	<1.0	0.19 JY	0.25 JY	0.19 JY	<1.0	<1.0	<1.0	<1.0	<1.0	0.26 J
Chloride	EPA 300.0	mg/L	1.1	2.0	2.0	2.0	2.4	1.6	1.8	1.6	1.5	1.5
Fluoride	EPA 300.0	mg/L	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
Sulfate	EPA 300.0	mg/L	617	610	577	583	653	640	650	642	645	646

TABLE A-4
DR-3A ANALYTICAL DATA
2012 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

Parameter	Sample ID		DR3A1210180900	DR3A1210190900	DR3A1210200900	DR3A1210210900	DR3A1210220900	DR3A1210230900	DR3A1210240600	DR3A1210250600	DR3A1210260600	DR3A1210270600
	Sample Date & Time		10/18/2012 9:00	10/19/2012 9:00	10/20/2012 9:00	10/21/2012 9:00	10/22/2012 9:00	10/23/2012 9:00	10/24/2012 6:00	10/25/2012 6:00	10/26/2012 6:00	10/27/2012 6:00
	Method	Units										
Metals												
Aluminum	EPA 200.7	ug/L	--	--	--	--	--	--	--	--	--	--
Aluminum, Dissolved	EPA 200.7	ug/L	--	--	--	--	--	--	--	--	--	--
Arsenic	EPA 200.8	ug/L	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	--	--	--	--
Arsenic, Dissolved	EPA 200.8	ug/L	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	--	--	--	--
Cadmium	EPA 200.8	ug/L	15.2	14.4	14.8	15.3	15.4	14.7	14.2	14.8	15.0 Y	14.1
Cadmium, Dissolved	EPA 200.8	ug/L	14.4	14.0	14.0	13.9	13.6	14.6	13.1 Y	13.6	13.4	13.4
Calcium	EPA 200.7	ug/L	206,000	203,000	216,000	207,000	209,000	208,000	--	--	--	--
Calcium, Dissolved	EPA 200.7	ug/L	218,000	208,000	208,000	210,000	215,000	212,000	--	--	--	--
Chromium	EPA 200.8	ug/L	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	--	--	--	--
Chromium, Dissolved	EPA 200.8	ug/L	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	--	--	--	--
Cobalt	EPA 200.8	ug/L	2.5 J	2.4 J	2.4 J	2.6 J	2.5 J	2.5 J	--	--	--	--
Cobalt, Dissolved	EPA 200.8	ug/L	2.6 J	2.4 J	2.5 J	2.4 J	2.4 J	2.6 J	--	--	--	--
Copper	EPA 200.8	ug/L	38.7	38.0	36.5	39.3	38.5	36.6	--	--	--	--
Copper, Dissolved	EPA 200.8	ug/L	3.0 J	3.1 J	3.0 J	3.9 J	3.1 J	3.7 J	--	--	--	--
Iron	EPA 200.7/200.8	ug/L	3,720	3,560	3,690	3,820	3,670	3,600	4,170	4,530	3,710	3,430
Iron, Dissolved	EPA 200.7/200.8	ug/L	24.4 J	33.0 J	26.5 J	451	221	81.1	320	27.0 JY	75.4 J	98.2 J
Lead	EPA 200.8	ug/L	1.5 J	1.5 J	1.6 J	1.6 J	1.6 J	1.7 J	--	--	--	--
Lead, Dissolved	EPA 200.8	ug/L	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	--	--	--	--
Lithium, Dissolved	EPA 200.8	ug/L	142	132	124	121	120	110	--	--	--	--
Magnesium	EPA 200.7	ug/L	17,500	17,500	18,600	17,800	18,100	18,100	--	--	--	--
Magnesium, Dissolved	EPA 200.7	ug/L	18,500	18,100	17,800	18,200	18,100	18,500	--	--	--	--
Manganese	EPA 200.8	ug/L	1,740	1,720	1,740	1,770	1,790	1,690	1,730	1,720	1,790	1,700
Manganese, Dissolved	EPA 200.8	ug/L	1,780	1,760	1,730	1,710	1,760	1,790	1,920	1690 Y	1,660	1,740
Mercury	EPA 245.1	ug/L	--	--	--	--	--	--	--	--	--	--
Nickel	EPA 200.8	ug/L	2.5 J	2.4 J	2.5 J	3.0 J	3.3 J	2.5 J	--	--	--	--
Nickel, Dissolved	EPA 200.8	ug/L	2.5 J	2.7 J	2.6 J	2.5 J	2.7 J	2.6 J	--	--	--	--
Potassium	EPA 200.7	ug/L	68,100	75,500	73,300	63,100	61,100	59,900	67,800	61,800	68,200	64,300
Potassium, Dissolved	EPA 200.7	ug/L	69,800	76,300	69,900	64,000	62,300	61,300	--	--	--	--
Selenium	EPA 200.8	ug/L	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	--	--	--	--
Selenium, Dissolved	EPA 200.8	ug/L	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	<5.0 Y	--	--	--	--
Silicon	EPA 200.7	ug/L	--	--	--	--	--	--	--	--	--	--
Silicon, Dissolved	EPA 200.7	ug/L	--	--	--	--	--	--	--	--	--	--
Sodium	EPA 200.7	ug/L	11,000	10,900	11,600	11,000	11,100	10,800	--	--	--	--
Sodium, Dissolved	EPA 200.7	ug/L	11,300	11,100	11,000	11,000	11,300	11,100	--	--	--	--
Zinc	EPA 200.8	ug/L	2,850	2,810	2,860	2,980	3,010	2,830	2,890	2,920	2,930	2,740
Zinc, Dissolved	EPA 200.8	ug/L	2,820	2,720	2,700	2,760	2,810	2,840	2,960	2,750	2,620	2,660
General Chemicals												
Alkalinity, Bicarbonate (CaCO3)	SM 2320B	mg/L	109	113	115	112	110	109	115	107	121	111
Alkalinity, Carbonate (CaCO3)	SM 2320B	mg/L	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
Alkalinity, Hydroxide (CaCO3)	SM 2320B	mg/L	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
Alkalinity, Total as CaCO3	SM 2320B	mg/L	109	113	115	112	110	109	115	107	121	111
Bromide	EPA 300.0	mg/L	0.26 J	0.25 J	0.26 J	0.38 J	0.26 J	0.27 J	--	--	--	--
Chloride	EPA 300.0	mg/L	1.3	1.3	1.3	1.3	1.2	1.2	--	--	--	--
Fluoride	EPA 300.0	mg/L	2.3	2.2	2.2	2.2	2.2	2.3	--	--	--	--
Sulfate	EPA 300.0	mg/L	646	642	648	646	643	642	--	--	--	--

TABLE A-4
DR-3A ANALYTICAL DATA
2012 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

Parameter	Sample ID		DR3A1210280600	DR3A1210290600	DR3A1210300600	DR3A1210310600	DR3A1211010600	DR3A1211020600	DR3A1211030600	DR3A1211040600	DR3A1211050600	DR3A1211060600
	Sample Date & Time		10/28/2012 6:00	10/29/2012 6:00	10/30/2012 6:00	10/31/2012 6:00	11/1/2012 6:00	11/2/2012 6:00	11/3/2012 6:00	11/4/2012 6:00	11/5/2012 6:00	11/6/2012 6:00
	Method	Units										
Metals												
Aluminum	EPA 200.7	ug/L	--	--	--	--	--	--	--	--	--	--
Aluminum, Dissolved	EPA 200.7	ug/L	--	--	--	--	--	--	--	--	--	--
Arsenic	EPA 200.8	ug/L	<5.0 Y	--	--	--	--	--	--	<5.0 Y	--	--
Arsenic, Dissolved	EPA 200.8	ug/L	<5.0 Y	--	--	--	--	--	--	0.40 JY	--	--
Cadmium	EPA 200.8	ug/L	13.3	13.6	14.4	14.8	14.6	14.0	14.1	14.4	14.4	14.5
Cadmium, Dissolved	EPA 200.8	ug/L	12.4	12.8	13.8	13.3	13.2	13.1	13.7	13.4	13.2	13.7
Calcium	EPA 200.7	ug/L	216,000	--	--	--	--	--	--	223,000	--	--
Calcium, Dissolved	EPA 200.7	ug/L	205,000	--	--	--	--	--	--	226,000	--	--
Chromium	EPA 200.8	ug/L	<5.0 Y	--	--	--	--	--	--	0.76 J	--	--
Chromium, Dissolved	EPA 200.8	ug/L	0.64 J	--	--	--	--	--	--	<5.0 Y	--	--
Cobalt	EPA 200.8	ug/L	2.4 J	--	--	--	--	--	--	2.6 J	--	--
Cobalt, Dissolved	EPA 200.8	ug/L	2.5 J	--	--	--	--	--	--	1.9 J	--	--
Copper	EPA 200.8	ug/L	32.1	--	--	--	--	--	--	36.8	--	--
Copper, Dissolved	EPA 200.8	ug/L	<5.0 Y	--	--	--	--	--	--	<5.0 Y	--	--
Iron	EPA 200.7/200.8	ug/L	3,520	3,560	3,480	3,700	3,720	3,890	3,770	4,060	3,770	3,810
Iron, Dissolved	EPA 200.7/200.8	ug/L	<50.0	32.2 J	54.6 JY	60.3 JY	80.3 J	99.5 J	74.8 J	<50.0	29.5 J	102 J
Lead	EPA 200.8	ug/L	1.4 J	--	--	--	--	--	--	2.6 JY	--	--
Lead, Dissolved	EPA 200.8	ug/L	<5.0 Y	--	--	--	--	--	--	0.80 JY	--	--
Lithium, Dissolved	EPA 200.8	ug/L	94.0	--	--	--	--	--	--	70.5	--	--
Magnesium	EPA 200.7	ug/L	19,200	--	--	--	--	--	--	19,200	--	--
Magnesium, Dissolved	EPA 200.7	ug/L	18,200	--	--	--	--	--	--	19,700	--	--
Manganese	EPA 200.8	ug/L	1,640	1,690	1,700	1,690	1,690	1,700	1,730	1,750	1,740	1,760
Manganese, Dissolved	EPA 200.8	ug/L	1,620	1,670	1,700	1,680	1,690	1,690	1,690	1,720	1,710	1,760
Mercury	EPA 245.1	ug/L	--	--	--	--	--	--	--	--	--	--
Nickel	EPA 200.8	ug/L	2.6 J	--	--	--	--	--	--	<5.0 Y	--	--
Nickel, Dissolved	EPA 200.8	ug/L	2.7 J	--	--	--	--	--	--	<5.0 Y	--	--
Potassium	EPA 200.7	ug/L	65,400	61,400	61,700	56,300	60,800	60,700	50,600	44,200	38,100	35,300
Potassium, Dissolved	EPA 200.7	ug/L	62,900	--	--	--	--	--	--	46,100	--	--
Selenium	EPA 200.8	ug/L	<5.0 Y	--	--	--	--	--	--	<5.0 Y	--	--
Selenium, Dissolved	EPA 200.8	ug/L	<5.0 Y	--	--	--	--	--	--	<2.0 Y	--	--
Silicon	EPA 200.7	ug/L	--	--	--	--	--	--	--	--	--	--
Silicon, Dissolved	EPA 200.7	ug/L	--	--	--	--	--	--	--	--	--	--
Sodium	EPA 200.7	ug/L	11,300	--	--	--	--	--	--	11,200	--	--
Sodium, Dissolved	EPA 200.7	ug/L	10,800	--	--	--	--	--	--	11,800	--	--
Zinc	EPA 200.8	ug/L	2,660	2,790	2,780	2,660	2,710	2,900	2,820	2,810	2,770	2,800
Zinc, Dissolved	EPA 200.8	ug/L	2,480	2,500	2,660	2,550	2,600	2,740	2,580	2,530	2,540	2,700
General Chemicals												
Alkalinity, Bicarbonate (CaCO3)	SM 2320B	mg/L	112	111	109	115	106	115	108	108	108	105
Alkalinity, Carbonate (CaCO3)	SM 2320B	mg/L	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
Alkalinity, Hydroxide (CaCO3)	SM 2320B	mg/L	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
Alkalinity, Total as CaCO3	SM 2320B	mg/L	112	111	109	115	106	115	108	108	108	105
Bromide	EPA 300.0	mg/L	0.29 J	--	--	--	--	--	--	0.31 J	--	--
Chloride	EPA 300.0	mg/L	1.1	--	--	--	--	--	--	0.99 J	--	--
Fluoride	EPA 300.0	mg/L	2.3	--	--	--	--	--	--	2.3	--	--
Sulfate	EPA 300.0	mg/L	640	--	--	--	--	--	--	651	--	--

TABLE A-4
DR-3A ANALYTICAL DATA
2012 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

Parameter	Sample ID		DR3A1211070600	DR3A1211080600	DR3A1211090600	DR3A1211100600	DR3A1211110600	DR3A1211120000	DR3A1211130600	DR3A1211140600
	Sample Date & Time		11/7/2012 6:00	11/8/2012 6:00	11/9/2012 6:00	11/10/2012 6:00	11/11/2012 6:00	11/12/2012 0:00	11/13/2012 6:00	11/14/2012 6:00
	Method	Units								
Metals										
Aluminum	EPA 200.7	ug/L	--	--	--	--	--	--	--	--
Aluminum, Dissolved	EPA 200.7	ug/L	--	--	--	--	--	--	--	--
Arsenic	EPA 200.8	ug/L	--	--	--	--	<5.0 Y	--	--	--
Arsenic, Dissolved	EPA 200.8	ug/L	--	--	--	--	<5.0 Y	--	--	--
Cadmium	EPA 200.8	ug/L	14.3	15.0	15.5	16.8	16.4	15.7	NR	NR
Cadmium, Dissolved	EPA 200.8	ug/L	13.7	13.5	13.8	15.3	14.8	14.8	NR	NR
Calcium	EPA 200.7	ug/L	--	--	--	--	239,000	--	--	--
Calcium, Dissolved	EPA 200.7	ug/L	--	--	--	--	245,000	--	--	--
Chromium	EPA 200.8	ug/L	--	--	--	--	0.98 J	--	0.42 J	0.38 J
Chromium, Dissolved	EPA 200.8	ug/L	--	--	--	--	<5.0 Y	--	<2.0 Y	0.19 J
Cobalt	EPA 200.8	ug/L	--	--	--	--	3.3 JY	--	--	--
Cobalt, Dissolved	EPA 200.8	ug/L	--	--	--	--	2.9 J	--	--	--
Copper	EPA 200.8	ug/L	--	--	--	--	59.7	--	--	--
Copper, Dissolved	EPA 200.8	ug/L	--	--	--	--	3.0 J	--	--	--
Iron	EPA 200.7/200.8	ug/L	3,780	4,340	4,610	5,700	5,900	5,150	5,100	5,390
Iron, Dissolved	EPA 200.7/200.8	ug/L	90.8 J	190 J	88.8 J	<250 Y	116	149 J	70.6 JY	142
Lead	EPA 200.8	ug/L	--	--	--	--	4.9 JY	--	--	--
Lead, Dissolved	EPA 200.8	ug/L	--	--	--	--	1.1 JY	--	--	--
Lithium, Dissolved	EPA 200.8	ug/L	--	--	--	--	39.8	--	--	--
Magnesium	EPA 200.7	ug/L	--	--	--	--	19,600	--	--	--
Magnesium, Dissolved	EPA 200.7	ug/L	--	--	--	--	20,300	--	--	--
Manganese	EPA 200.8	ug/L	1,740	1,630	1,700	1,900	1,880	1,820	1,830	1,810
Manganese, Dissolved	EPA 200.8	ug/L	1,760	1,740	1,760	1,910	1,890	1,820	1,820	1,790
Mercury	EPA 245.1	ug/L	--	--	--	--	--	--	--	--
Nickel	EPA 200.8	ug/L	--	--	--	--	4.5 J	--	--	--
Nickel, Dissolved	EPA 200.8	ug/L	--	--	--	--	4.1 J	--	--	--
Potassium	EPA 200.7	ug/L	31,700	31,700	58,900	46,100	42,300	43,400	25,700	25,300
Potassium, Dissolved	EPA 200.7	ug/L	--	--	--	--	22,900	--	--	--
Selenium	EPA 200.8	ug/L	--	--	--	--	<5.0 Y	--	--	--
Selenium, Dissolved	EPA 200.8	ug/L	--	--	--	--	<5.0 Y	--	--	--
Silicon	EPA 200.7	ug/L	--	--	--	--	--	--	--	--
Silicon, Dissolved	EPA 200.7	ug/L	--	--	--	--	--	--	--	--
Sodium	EPA 200.7	ug/L	--	--	--	--	11,100	--	--	--
Sodium, Dissolved	EPA 200.7	ug/L	--	--	--	--	12,100	--	--	--
Zinc	EPA 200.8	ug/L	2,900	2,760	2,860	3,210	3,190	3,040	2,930	2,690
Zinc, Dissolved	EPA 200.8	ug/L	2,790	2,720	2,740	3,050	3,050	2,920	2,790	2,470
General Chemicals										
Alkalinity, Bicarbonate (CaCO3)	SM 2320B	mg/L	104	107	107	108	109	106	105	107
Alkalinity, Carbonate (CaCO3)	SM 2320B	mg/L	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
Alkalinity, Hydroxide (CaCO3)	SM 2320B	mg/L	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
Alkalinity, Total as CaCO3	SM 2320B	mg/L	104	107	107	108	109	106	105	107
Bromide	EPA 300.0	mg/L	--	--	--	--	1.1	--	--	--
Chloride	EPA 300.0	mg/L	--	--	--	--	5.1	--	--	--
Fluoride	EPA 300.0	mg/L	--	--	--	--	2.3	--	--	--
Sulfate	EPA 300.0	mg/L	--	--	--	--	662	--	--	--

TABLE A-4
DR-3A ANALYTICAL DATA
2012 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

Notes

Samples were collected at DR-3A (St. Louis Tunnel discharge).

Abbreviations

-- = not analyzed

CaCO₃ = calcium carbonate

J = Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

mg/L = milligrams per liter

NM = not measured

ug/L = micrograms per liter

Y = Dissolved result is greater than the total. Data is within laboratory control limits.

APPENDIX B

2013 Injection Test Analytical and Monitoring Data

TABLE B-1
517 SHAFT WATER QUALITY DATA
2013 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

Date & Time	Elapsed Time (days)	Temperature (°C)	Specific Conductivity (µS/cm)	ORP* (mV)	pH
6/19/13 14:00	-1.92	12.3	1551.55	127	6.8
6/22/13 4:00	0.67	12.45	1664.58	43	8.28
6/23/13 4:00	1.67	13.04	1574.79	23	8.65
6/24/13 4:00	2.67	13.7	1573.69	14	8.93
6/25/13 4:00	3.67	14.22	1588.46	8	9.35
6/26/13 4:00	4.67	14.58	1595.19	13	9.16
6/27/13 4:00	5.67	14.81	1600.06	17	8.96
6/28/13 4:00	6.67	11.55	1187.58	39	8.49
6/29/13 4:00	7.67	9.62	2435.67	-93	12.2
6/30/13 4:00	8.67	8.81	3321.51	-99	12.45
7/1/13 4:00	9.67	8.47	2565.69	-93	12.31
7/2/13 4:00	10.67	8.48	3179.40	-100	12.46
7/3/13 4:00	11.67	8.03	1907.61	-91	12.13
7/4/13 4:00	12.67	8.19	4508.26	-109	12.66
7/5/13 4:00	13.67	8.32	5612.62	-110	12.76
7/6/13 4:00	14.67	8.48	5585.67	-108	12.75
7/7/13 4:00	15.67	8.6	5685.81	-107	12.75
7/8/13 4:00	16.67	8.72	5784.22	-107	12.75
7/9/13 4:00	17.67	8.39	4106.66	-100	12.58
7/9/13 13:00	18.04	8.43	4151.08	-102	12.59
7/10/13 14:00	19.08	9.08	2970.71	38	12.28
7/11/13 4:00	19.67	9.52	2731.91	35	12.23
7/12/13 4:00	20.67	9.86	2251.62	39	12.06
7/13/13 4:00	21.67	10.18	1889.17	44	11.85
7/14/13 4:00	22.67	10.46	1607.42	55	11.54
7/15/13 4:00	23.67	10.62	1410.27	71	11.07
7/16/13 4:00	24.67	10.75	1311.03	86	10.57
7/17/13 4:00	25.67	10.83	1263.02	94	10.17
7/18/13 4:00	26.67	10.88	1237.82	98	9.81
7/19/13 4:00	27.67	10.89	1230.65	102	9.48
7/20/13 4:00	28.67	10.93	1235.26	106	9.14
7/21/13 4:00	29.67	10.73	1304.18	172	15.38**
7/22/13 4:00	30.67	10.75	1271.96	155	14.57
7/23/13 4:00	31.67	10.77	1271.64	3	14.04
7/24/13 4:00	32.67	10.79	1280.16	-538	13.66
7/25/13 4:00	33.67	10.83	1291.97	-636	13.57
7/26/13 12:00	35.00	10.88	1309.6	-660	14.41
7/27/13 4:00	35.67	10.92	1318.58	-667	14.19
7/28/13 4:00	36.67	10.97	1331.37	-674	14.53
7/29/13 12:00	38.00	11.04	1348.26	-678	15.95
7/30/13 4:00	38.67	11.07	1356.09	-680	14.23
8/1/13 12:00	41.00	11.15	1380.76	-685	17.77
8/5/13 11:00	44.96	11.26	1415.25	-686	18.55

TABLE B-1
517 SHAFT WATER QUALITY DATA
2013 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

Date & Time	Elapsed Time (days)	Temperature (°C)	Specific Conductivity (µS/cm)	ORP* (mV)	pH
8/8/13 10:00	47.92	9.97	1398.37	-689	18.85
8/12/13 11:00	51.96	10.44	1351.19	-693	20.3
8/15/13 10:00	54.92	10.31	1321.29	-696	20.73
8/19/13 10:00	58.92	10.93	1321.38	-696	19.09

Notes

Start of NaOH injection was 6/21/2013

*Reliability of ORP data is uncertain

**Installed replacement sonde on 7/20/2013; pH data considered unreliable after this date.

Sonde was removed from 517 Shaft and monitoring ended on 8/22/2013.

Water quality data from the 517 Shaft were logged at time intervals of 1 to 60 minutes throughout the test. Data shown are a subset, corresponding to times that DR-3A samples were collected (see Table B-4) while monitoring of the 517 Shaft was conducted.

Abbreviations

°C - degrees Centigrade

mV = millivolts

ORP = oxidation reduction potential

µS/cm - microSiemens per centimeter

TABLE B-2
517 SHAFT ANALYTICAL DATA
2013 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

Parameter	Sample ID		517SHAFT465130430	517SHAFT463130516	517SHAFT475130516	517SHAFT500130517	517SHAFT520130517	517SHAFT465130619	SILVERCREEK130619	517SHAFT465130709	517SHAFT465130720	517SHAFT465130821
	Sample Date & Time		04/30/2013 11:20	05/16/2013 12:10	05/16/2013 12:50	05/17/2013 11:46	05/17/2013 13:55	06/19/2013 10:50	06/19/2013 12:40	07/09/2013 15:00	07/20/2013 09:40	08/21/2013 12:45
	Method	Units										
Metals												
Aluminum	EPA 200.7	ug/L	114	280	542	368	1,240	76.4	131	236	34.2 J	185
Aluminum, Dissolved	EPA 200.7	ug/L	72.2 J	47.9 J	58.5 J	62.4 J	52.4 J	87.6 Y	54.8 J	<75.0	31.2 J	53.3 J
Arsenic	EPA 200.8	ug/L	0.18 J	0.92 J	1.9	2.3	10.2	0.13 J	0.76 J	2.7	0.50 J	3.1
Arsenic, Dissolved	EPA 200.8	ug/L	0.12 J	0.083 J	0.12 J	0.13 J	0.096 J	0.10 J	0.56 J	0.67 J	0.11 J	1.1
Cadmium	EPA 200.8	ug/L	15.0	12.6	13.8	13.5	23.3	9.4	1.4	2.3	0.61	4.7
Cadmium, Dissolved	EPA 200.8	ug/L	14.9	11.1	11.0	10.9	11.0	9.6Y	0.76	<0.50	<0.50	3.1
Calcium	EPA 200.7	ug/L	279,000	276,000	285,000 Y	280,000	294,000	312,000 Y	28,800	44,500	32,800	172,000
Calcium, Dissolved	EPA 200.7	ug/L	291,000 Y	294,000 Y	294,000 Y	289,000 Y	290,000	314,000 Y	30,000 Y	3,450	32,000	160,000
Chromium	EPA 200.8	ug/L	0.90 JY	0.73 JY	1.0	1.4	2.7	0.68 J	0.47 J	4.5	12.2	0.79 JY
Chromium, Dissolved	EPA 200.8	ug/L	0.45 JY	0.97 JY	0.74 JY	0.61 JY	0.69 JY	0.34 J	0.36 J	1.0	0.96 J	0.20 JY
Cobalt	EPA 200.8	ug/L	0.98 J	1.5	1.8	1.8	4.3	1.0	0.15 J	0.23 J	0.56 J	2.4
Cobalt, Dissolved	EPA 200.8	ug/L	1.0 Y	1.3	1.3	1.2	1.0 Y	1.1 Y	<1.0	0.21 J	1.1Y	2.4
Copper	EPA 200.8	ug/L	25.3	70.9	129	80.7	274	16.1	13.6	16.6	15.2	26.0
Copper, Dissolved	EPA 200.8	ug/L	13.9	12.2	12.1	9.0	6.3 Y	8.2	2.7	5.7	10.2	5.8
Iron	EPA 200.7	ug/L	725	2430	4740	3900	18500	719	712	780	777	4650
Iron, Dissolved	EPA 200.7	ug/L	27.2 J	<50.0	<50.0	<50.0	<50.0	11.8 J	157	19.7 J	28.7 JY	148
Lead	EPA 200.8	ug/L	2.5	10.7	22.6	30.2	160	6.3	2.3	130	2.2	61.9
Lead, Dissolved	EPA 200.8	ug/L	0.088 J	0.31 JY	0.32 JY	0.31 JY	0.35 JY	0.16 J	1.1	10.3	0.12 JY	1.1
Lithium	EPA 200.7	ug/L	42.2	36.6	35.5	34.4	36.5	32.8	2.6 J	14.6	21.0	28.8
Lithium, Dissolved	EPA 200.7	ug/L	44.1	34.2	34.0	35.5 Y	34.7	26.6	<10.0	13.8	19.6	28.2
Magnesium	EPA 200.7	ug/L	21,600	21,800	22,000	21,700	21,700	26,300	3,090	10,100	8,030	15,900
Magnesium, Dissolved	EPA 200.7	ug/L	22,300 Y	22,800 Y	22,800 Y	22,500 Y	22,100 Y	25,300	2,960	547	8,100 Y	15,600
Manganese	EPA 200.8	ug/L	1,540	1,580 Y	1,820	1,850	4,110	1,170	54.0	148	537	2,210
Manganese, Dissolved	EPA 200.8	ug/L	1,580 Y	1,390	1,380 Y	1,340	1,250	1,210 Y	14.3	0.96 JY	344	1,600
Mercury	EPA 245.1	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Mercury, Dissolved	EPA 245.1	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Nickel	EPA 200.8	ug/L	3.2	4.2	4.4	4.7	5.8	2.4 Y	0.38 JY	0.91 J	2.3	4.1
Nickel, Dissolved	EPA 200.8	ug/L	3.2	4.2	4.1	4.1	4.1	2.8 Y	<1.0	0.16 J	1.7	3.6
Potassium	EPA 200.7	ug/L	97,500	54,600	54,100	52,400	52,300	24,900 Y	544	41,900	29,300	54,900
Potassium, Dissolved	EPA 200.7	ug/L	99,100 Y	55,800 Y	54,900 Y	53,000 Y	52,500 Y	24,100	465 J	41,300	28,100	54,900
Selenium	EPA 200.8	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0 J	<1.0	0.18 J	0.46 J	0.44 J	0.79 J
Selenium, Dissolved	EPA 200.8	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.42 J	0.25 J	0.46 J
Silicon	EPA 200.7	ug/L	NM	NM	NM	NM	NM	6,360	1,510	2,020	3,210	4,500
Silicon, Dissolved	EPA 200.7	ug/L	NM	NM	NM	NM	NM	6,960 Y	1,570 Y	1,590	3,070	4,150
Sodium	EPA 200.7	ug/L	11,000	10,400	10,300	10,300	10,200	9,230 Y	1,340	424,000	209,000	67,100
Sodium, Dissolved	EPA 200.7	ug/L	11,200 Y	10,700 Y	10,600 Y	10,600 Y	10,500 Y	9,300 Y	1,260	418,000	198,000	66,900
Zinc	EPA 200.7	ug/L	3,680	2,830	3,070	2,950	4,310	2,990	214	577	430	1,660
Zinc, Dissolved	EPA 200.7	ug/L	3,600	2,800	2,770	2,660	2,600	2,950	139	<50.0	55.4 Y	1,190
General Chemicals												
Alkalinity, Bicarbonate (CaCO3)	SM 2320B	mg/L	224	215	208	224	230	252	68.4	<20.0	121	330
Alkalinity, Carbonate (CaCO3)	SM 2320B	mg/L	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	522	94.5	<20.0
Alkalinity, Hydroxide (CaCO3)	SM 2320B	mg/L	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	457	<20.0	<20.0
Alkalinity, Total as CaCO3	SM 2320B	mg/L	224	215	208	224	230	252	68.4	978	216	330
Bromide	EPA 300.0	mg/L	<1.0	0.67 J	<1.0	0.60 J	0.57 J	<1.0	<1.0	0.94 J	0.48 J	<1.0
Chloride	EPA 300.0	mg/L	0.92 JY	1.0	1.0	0.99 J	0.96 J	1.5	0.56 J	1.3	1.0	1.2
Fluoride	EPA 300.0	mg/L	1.7	1.5	1.6	1.6	1.7	1.7	<0.20	0.11 J	1.9	1.3
Sulfate	EPA 300.0	mg/L	1,020	701	666	707	707	664	8.5	39.1	389	341

Notes

Data are from 517 Shaft samples and from Silver Creek (SILVERCREEK130619, representative of carrier water).
Depth of samples from the 517 Shaft are measured from the shaft collar. Water surface is at about 465 feet (noted as 463 feet for the May 16, 2013 sample).
Sample depth is noted in Sample ID as the 3 digits after "517SHAFT"

Abbreviations

CaCO3 = calcium carbonate
mg/L = milligrams per liter
ug/L = micrograms per liter
Y = Dissolved result is greater than the total. Data is within laboratory control limits.
J = Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
NM = not measured

TABLE B-3
DR-3A WATER QUALITY DATA
2013 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

Date & Time	Elapsed Time (days)	Temperature (°C)	Specific Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	pH
6/19/2013 14:20	-1.90	19.72	1302	4.06	123	6.85
6/21/2013 20:00	0.33	19.62	1307	4.03	132.8	6.8
6/22/2013 4:00	0.67	19.54	1308	4.05	134.7	6.79
6/22/2013 12:00	1.00	19.71	1305	4.04	135.2	6.79
6/22/2013 20:00	1.33	19.58	1302	4.02	136.4	6.79
6/23/2013 4:00	1.67	19.51	1304	4.06	137.8	6.8
6/23/2013 12:00	2.00	19.73	1302	4.02	138.1	6.8
6/23/2013 20:00	2.33	19.59	1301	4	139.7	6.8
6/24/2013 4:00	2.67	19.51	1299	4.03	144.4	6.8
6/24/2013 12:00	3.00	19.6	1296	3.96	150.8	6.81
6/24/2013 20:00	3.33	19.61	1304	4.04	137.4	6.81
6/25/2013 4:00	3.67	19.51	1305	4.07	155.8	6.82
6/25/2013 12:00	4.00	19.7	1302	4.08	193.6	6.83
6/25/2013 20:00	4.33	19.61	1299	4.08	203.7	6.83
6/26/2013 4:00	4.67	19.47	1300	4.13	246.2	6.84
6/26/2013 12:00	5.00	19.77	1297	4.11	196.1	6.84
6/26/2013 20:00	5.33	19.65	1295	4.11	177.5	6.83
6/27/2013 4:00	5.67	19.53	1297	4.17	217	6.85
6/27/2013 12:00	6.00	19.89	1296	4.13	248.3	6.84
6/27/2013 20:00	6.33	19.69	1310	4.13	327.7	6.74
6/28/2013 4:00	6.67	19.51	1315	4.18	347.8	6.8
6/28/2013 12:00	7.00	19.68	1313	4.14	333.3	6.81
6/28/2013 20:00	7.33	19.61	1307	4.12	327.6	6.82
6/29/2013 4:00	7.67	19.47	1309	4.15	347.8	6.84
6/29/2013 12:00	8.00	19.62	1314	4.12	332.3	6.86
6/29/2013 20:00	8.33	19.55	1315	4.09	330	6.87
6/30/2013 4:00	8.67	19.44	1316	4.13	345.9	6.88
6/30/2013 12:00	9.00	19.6	1315	4.1	332.8	6.89
6/30/2013 20:00	9.33	19.53	1314	4.08	319.2	6.9
7/1/2013 4:00	9.67	19.44	1315	4.11	345.5	6.9
7/1/2013 12:00	10.00	19.63	1311	4.11	332	6.89
7/1/2013 20:00	10.33	19.58	1298	4.08	314.9	6.85
7/2/2013 4:00	10.67	19.51	1302	4.11	346.1	6.85
7/2/2013 12:00	11.00	19.69	1302	4.11	330	6.88
7/2/2013 20:00	11.33	19.56	1299	4.08	316	6.85
7/3/2013 4:00	11.67	19.49	1301	4.07	343.2	6.86

TABLE B-3
DR-3A WATER QUALITY DATA
2013 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

Date & Time	Elapsed Time (days)	Temperature (°C)	Specific Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	pH
7/3/2013 12:00	12.00	19.7	1296	4.03	330.9	6.86
7/3/2013 20:00	12.33	19.5	1295	4.05	316.1	6.86
7/4/2013 4:00	12.67	19.48	1296	4.03	335.6	6.86
7/4/2013 12:00	13.00	19.59	1299	4.02	325.1	6.88
7/4/2013 20:00	13.33	19.54	1300	4.01	317.6	6.9
7/5/2013 4:00	13.67	19.49	1301	4	336.4	6.9
7/5/2013 12:00	14.00	19.69	1300	4	325.1	6.91
7/5/2013 20:00	14.33	19.56	1299	3.99	315.9	6.91
7/6/2013 4:00	14.67	19.52	1301	3.99	336.3	6.92
7/6/2013 12:00	15.00	19.6	1298	4.02	325.3	6.93
7/6/2013 20:00	15.33	19.57	1297	4	321	6.93
7/7/2013 4:00	15.67	19.52	1297	4.01	334.6	6.93
7/7/2013 12:00	16.00	19.73	1296	4.02	325.4	6.93
7/7/2013 20:00	16.33	19.58	1295	4.01	313.3	6.92
7/8/2013 4:00	16.67	19.55	1296	4.03	335.2	6.92
7/8/2013 12:00	17.00	19.7	1286	4.4	103.1	6.86
7/8/2013 20:00	17.33	19.6	1287	4.12	108.5	6.91
7/9/2013 4:00	17.67	19.5	1290	4.14	112.8	6.96
7/9/2013 12:00	18.00	19.6	1289	4.04	118.8	6.97
7/9/2013 20:00	18.33	19.55	1286	4.17	121	6.97
7/10/2013 4:00	18.67	19.61	1272	4.13	95.9	6.87
7/10/2013 12:00	19.00	19.71	1271	4.11	99.5	6.86
7/10/2013 20:00	19.33	19.72	1270	4.08	98.2	6.85
7/11/2013 4:00	19.67	19.69	1272	4.07	96.8	6.85
7/11/2013 12:00	20.00	19.83	--	4.04	90.8	6.85
7/11/2013 20:00	20.33	19.75	--	4	93	6.83
7/12/2013 4:00	20.67	19.74	--	3.98	95.7	6.83
7/12/2013 12:00	21.00	19.91	1271	3.94	95.2	6.83
7/12/2013 20:00	21.33	19.75	1269	3.92	100.3	6.83
7/13/2013 4:00	21.67	19.71	1269	3.92	105.5	6.83
7/13/2013 12:00	22.00	19.92	1265	3.92	109.8	6.83
7/13/2013 20:00	22.33	19.76	1262	3.92	113.9	6.83
7/14/2013 4:00	22.67	19.69	1261	3.92	118.7	6.83
7/14/2013 12:00	23.00	19.81	1257	3.9	124.1	6.83
7/14/2013 20:00	23.33	19.78	1254	3.87	127.6	6.82
7/15/2013 4:00	23.67	19.71	1252	3.86	131.2	6.82

TABLE B-3
DR-3A WATER QUALITY DATA
2013 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

Date & Time	Elapsed Time (days)	Temperature (°C)	Specific Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	pH
7/15/2013 12:00	24.00	19.84	1273	3.92	108.2	6.82
7/15/2013 20:00	24.33	19.74	1274	3.85	116	6.82
7/16/2013 4:00	24.67	19.72	1273	3.84	121.8	6.82
7/16/2013 12:00	25.00	19.76	1272	3.83	126.8	6.82
7/16/2013 20:00	25.33	19.73	1268	3.83	139.7	6.82
7/17/2013 4:00	25.67	19.71	1268	3.79	141.1	6.83
7/17/2013 12:00	26.00	19.83	1267	3.68	151.1	6.83
7/17/2013 20:00	26.33	19.75	1266	3.83	161.9	6.83
7/18/2013 4:00	26.67	19.72	1267	3.82	173.2	6.83
7/18/2013 12:00	27.00	19.82	1264	3.61	185.9	6.83
7/18/2013 20:00	27.33	19.72	1279	3.74	310	6.72
7/19/2013 4:00	27.67	19.66	1280	3.73	322.9	6.73
7/19/2013 12:00	28.00	19.9	1279	3.69	321.7	6.74
7/19/2013 20:00	28.33	19.76	1276	3.7	320.1	6.75
7/20/2013 4:00	28.67	19.71	1277	3.69	321.2	6.76
7/20/2013 12:00	29.00	19.94	1276	3.67	320.2	6.76
7/20/2013 20:00	29.33	19.73	1275	3.61	318.7	6.75
7/21/2013 4:00	29.67	19.67	1275	3.58	322.4	6.76
7/21/2013 12:00	30.00	19.94	1274	3.56	321.8	6.77
7/21/2013 20:00	30.33	19.75	1273	3.54	322.4	6.77
7/22/2013 4:00	30.67	19.69	1273	3.55	325.4	6.78
7/22/2013 12:00	31.00	19.89	1271	3.54	324.3	6.78
7/22/2013 20:00	31.33	19.78	1291	3.98	108.4	6.79
7/23/2013 4:00	31.67	19.71	1291	3.8	135.7	6.8
7/23/2013 12:00	32.00	19.95	1289	3.7	136.3	6.8
7/23/2013 20:00	32.33	19.76	1288	3.64	120.4	6.8
7/24/2013 4:00	32.67	19.75	1288	3.6	115.5	6.8
7/24/2013 12:00	33.00	19.82	1287	3.44	112.7	6.8
7/24/2013 20:00	33.33	19.79	1285	3.51	109	6.8
7/25/2013 4:00	33.67	19.77	1285	3.46	111.4	6.8
7/25/2013 12:00	34.00	19.93	1284	3.38	113.2	6.8
7/26/2013 12:00	35.00	19.86	1283	6.31	108.7	6.81
7/26/2013 20:00	35.33	19.78	1281	6.27	108.5	6.81
7/27/2013 4:00	35.67	19.75	1281	6.24	109.6	6.81
7/27/2013 12:00	36.00	19.94	1281	6.31	99.2	6.82

TABLE B-3
DR-3A WATER QUALITY DATA
2013 INJECTION TEST
 Rico-Argentine Mine Site
 Dolores County, Colorado

Date & Time	Elapsed Time (days)	Temperature (°C)	Specific Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	pH
7/27/2013 20:00	36.33	19.77	1281	6.76	100.4	6.81
7/28/2013 4:00	36.67	19.79	1281	6.52	101.4	6.8
7/28/2013 12:00	37.00	19.82	1280	6.28	101.6	6.79
7/28/2013 20:00	37.33	19.76	1279	6.11	104.7	6.79
7/29/2013 4:00	37.67	19.69	1273	5.99	104.1	6.79
7/29/2013 12:00	38.00	19.87	1275	5.86	109.3	6.8
7/29/2013 20:00	38.33	19.72	1274	5.77	117.3	6.81
7/30/2013 4:00	38.67	19.6	1274	5.8	122.4	6.83
7/30/2013 12:00	39.00	19.89	1271	5.91	125.6	6.83
8/1/2013 12:00	41.00	19.79	--	4.45	52	6.77
8/5/2013 11:00	44.96	19.77	1268	4.01	35.1	6.73
8/8/2013 9:35	47.90	19.75	1266	4.29	44.6	6.74
8/12/2013 11:15	51.97	19.79	1262	4.08	75.1	6.77
8/15/2013 10:25	54.93	19.81	1273	5.16	62.1	6.84
8/19/2013 10:10	58.92	19.81	1273	4.42	69.5	6.76
8/26/2013 11:05	65.96	19.84	1256	4.03	53.5	6.69
9/3/2013 13:30	74.06	19.8	1268	3.94	37	6.78
9/9/2013 9:00	79.88	19.73	1279	3.91	40.4	6.7
9/16/2013 10:25	86.93	19.58	1288	3.88	55.7	6.7

Notes:

Start Time for the 2013 injection test was 14:45 on 9/26/2012

Data in this table correspond to water quality parameters measured when DR-3A samples were collected.

Abbreviations:

-- = no data

°C - degrees Centigrade

d - days

mg/L - milligrams per liter

mV = millivolts

NM - not measured.

ORP = oxidation reduction potential

µS/cm - microSiemens per centimeter

TABLE B-4
DR-3A ANALYTICAL DATA
2013 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

Sample ID			DR3A130619	DR3A1306220400	DR3A1306230400	DR3A1306240400	DR3A1306250400	DR3A1306260400	DR3A1306270400	DR3A1306280400	DR3A1306290400	DR3A1306300400	DR3A1307010400	DR3A1307020400
Sample Date & Time			6/19/13 14:20	6/22/13 4:00	6/23/13 4:00	6/24/13 4:00	6/25/13 4:00	6/26/13 4:00	6/27/13 4:00	6/28/13 4:00	6/29/13 4:00	6/30/13 4:00	7/1/13 4:00	7/2/13 4:00
Parameter	Method	Units												
Metals														
Aluminum	EPA 200.7	ug/L	956	958	1050	952	933	907	830	771	631	445	440	440
Aluminum, Dissolved	EPA 200.7	ug/L	100	66.8 J	64.5 J	81.7	59.4 J	67.0 J	59.1 J	61.9 J	62.4 J	66.5 J	63.0 J	56.2 J
Arsenic	EPA 200.8	ug/L	1.4	1.6	1.6	1.4	1.3	1.3	1.3	1.3	0.65 J	0.56 J	0.42 J	0.59 J
Arsenic, Dissolved	EPA 200.8	ug/L	0.17 J	0.073 J	<1.0	0.077 J	<1.0	<1.0	0.13 J	0.099 J	<1.0	<1.0	<1.0	0.072 J
Cadmium	EPA 200.8	ug/L	23.4	24.4	24.8	24.2	23.2	22.9	21.4	21.2	20.9	20.1	19.0	19.5
Cadmium, Dissolved	EPA 200.8	ug/L	20.8	20.1	21.4	20.3	20.2	19.4	19.4	19.7	17.5	17.5	17.4	18.4
Calcium	EPA 200.7	ug/L	245,000	257,000	258,000	260,000	259,000	265,000	238,000	244,000	249,000	237,000	229,000	222,000
Calcium, Dissolved	EPA 200.7	ug/L	229,000	260,000	261,000	260,000	255,000	258,000	242,000	244,000	250,000	250,000	240,000	230,000
Chromium	EPA 200.8	ug/L	1.0	0.86 J	0.93 J	1.4	0.95 JY	0.95 JY	0.82 J	1.1	0.41 JY	0.20 JY	0.14 JY	0.45 J
Chromium, Dissolved	EPA 200.8	ug/L	0.43 J	0.23 J	0.34 J	0.74 J	0.95 J	0.30 J	3.3	5.6	<1.0	<1.0	0.17 JY	0.32 JY
Cobalt	EPA 200.8	ug/L	2.6	2.8	2.9	2.9	2.6	2.7	2.5	2.5	2.3	2.4	2.3	2.4
Cobalt, Dissolved	EPA 200.8	ug/L	2.4	2.7	2.8	2.6	2.7	2.5	3.6	3.6	3.5	3.9	3.4	3.6
Copper	EPA 200.8	ug/L	194	210	228	202	182	181	182	168	120	91.7	89.5	88.2
Copper, Dissolved	EPA 200.8	ug/L	19.1	6.8	7.9	8.5	7.4	7.5	8.1	7.8	4.4Y	4.5Y	6.2	6.9
Iron	EPA 200.7	ug/L	8,490	9,080	9,960	8,940	9,120	8,980	8,030	7,400	6,240	5,390	4,800	4,450
Iron, Dissolved	EPA 200.7	ug/L	1,790	17.6 J	20.8 J	17.6 J	<50.0	<50.0	<50.0	12.4 J	<50.0	<50.0	<50.0	22.2 J
Lead	EPA 200.8	ug/L	16.2	16.5	18.1	15.7	15.0	14.5	14.1	13.0	9.0	5.9	6.2	5.8
Lead, Dissolved	EPA 200.8	ug/L	0.14 J	0.046 JY	0.13 JY	0.060 JY	0.12 JY	0.14 JY	0.40 JY	0.40 JY	0.096 JY	0.095 JY	0.12 JY	0.27 JY
Lithium	EPA 200.7	ug/L	29.4	26.6	26.7	29.2	28.8	27.1	24.6	26.0	27.5	26.5	25.7	25.9
Lithium, Dissolved	EPA 200.7	ug/L	21.4	25.2	26.0	27.2	26.5	27.1	25.5	25.1	27.0	27.2	27.4	27.5
Magnesium	EPA 200.7	ug/L	20,300	21,700	21,700	22,000	19,900	20,700	19,000	19,400	20,700	18,700	18,400	18,700
Magnesium, Dissolved	EPA 200.7	ug/L	18,200	21,300	21,400	21,600	20,000	20,900	19,400	19,200	20,000	20,100	19,100	19,400
Manganese	EPA 200.8	ug/L	1,840	1,980	1,980	1,970	1,930	1,940	1,810	1,800	1,830	1,810	1,710	1,760
Manganese, Dissolved	EPA 200.8	ug/L	1,760	1,970	1,970	1,840	1,940	1,850	1,880	1,850	1,800	1,790	1,730	1,820
Mercury	EPA 245.1	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Mercury, Dissolved	EPA 245.1	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Nickel	EPA 200.8	ug/L	3.2	3.5	3.5	3.5	4.1	4.2	4.1	4.1	3.8	3.5	3.5	3.8
Nickel, Dissolved	EPA 200.8	ug/L	3.9	3.3	3.7	3.1	4.5	4.3	6.2	6.6	3.8	3.8	3.6	4.3
Potassium	EPA 200.7	ug/L	4,010	3,930	4,070	4,390	4,540	4,450	3,880	4,030	5,770	5,540	5,240	5,460
Potassium, Dissolved	EPA 200.7	ug/L	3,360	3,780	3,880	4,200	4,390	4,420	3,980	4,020	5,740	5,610	5,390	5,150
Selenium	EPA 200.8	ug/L	0.19 J	0.28 J	0.21 J	0.27 J	<1.0	<1.0	0.31 J	0.25 J	0.46 JY	0.38 JY	0.40 JY	<1.0
Selenium, Dissolved	EPA 200.8	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.34 JY	0.34 JY	0.36 JY	<1.0
Silicon	EPA 200.7	ug/L	8,100	8,940	9,060	9,050	8,700	8,910	8,040	8,140	8,300	7,640	7,400	7,020
Silicon, Dissolved	EPA 200.7	ug/L	7,200	7,980	7,840	7,770	7,690	7,850	7,360	7,360	7,360	7,410	7,190	6,860
Sodium	EPA 200.7	ug/L	12,400	12,300	12,700	14,700	17,200	18,300	18,600	21,500	27,600	29,400	32,600	30,600
Sodium, Dissolved	EPA 200.7	ug/L	11,100	11,800	12,300	14,200	16,500	17,900	19,200	21,800	27,400	30,100	33,300	30,500
Zinc	EPA 200.7	ug/L	4,340	4,560	4,560	4,490	4,410	4,360	4,040	4,040	4,220	3,620	3,730	3,470
Zinc, Dissolved	EPA 200.7	ug/L	3,610	3,730	3,630	3,660	3,890	3,930	3,670	3,610	3,420	3,530	3,200	3,440
General Chemicals														
Alkalinity, Bicarbonate (CaCO3)	SM 2320B	mg/L	91.2	98.0	97.0	99.2	93.5	90.5	91.5	92.2	94.0	101	104	94.2
Alkalinity, Carbonate (CaCO3)	SM 2320B	mg/L	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
Alkalinity, Hydroxide (CaCO3)	SM 2320B	mg/L	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
Alkalinity, Total as CaCO3	SM 2320B	mg/L	91.2	98.0	97.0	99.2	93.5	90.5	91.5	92.2	94.0	101	104	94.2
Bromide	EPA 300.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloride	EPA 300.0	mg/L	0.77 J	0.69 J	0.71 J	0.62 J	0.70 J	0.67 J	0.68 J	0.65 J	0.85 J	0.89 J	0.85 J	0.82 J
Fluoride	EPA 300.0	mg/L	2.3	2.4	2.4	2.2	2.5	2.3	2.4	2.4	2.2	2.3	2.1	2.4
Sulfate	EPA 300.0	mg/L	653	611	617	620	779	761	729	738	629	626	623	785

TABLE B-4
DR-3A ANALYTICAL DATA
2013 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

Sample ID			DR3A1307030400	DR3A1307040400	DR3A1307050400	DR3A1307060400	DR3A1307070400	DR3A1307080400	DR3A1307090400	DR3A1307100400	DR3A1307110400	DR3A1307120400	DR3A1307130400	DR3A1307140400
Sample Date & Time			7/3/13 4:00	7/4/13 4:00	7/5/13 4:00	7/6/13 4:00	7/7/13 4:00	7/8/13 4:00	7/9/13 4:00	7/10/13 4:00	7/11/13 4:00	7/12/13 4:00	7/13/13 4:00	7/14/13 4:00
Parameter	Method	Units												
Metals														
Aluminum	EPA 200.7	ug/L	384	366	320	334	327	331	328	304	452	540	615	675
Aluminum, Dissolved	EPA 200.7	ug/L	43.1 J	49.8 J	65.1 J	53.1 J	57.8 J	53.3 J	57.5 J	55.1 J	46.5 J	53.6 J	49.4 J	58.7 J
Arsenic	EPA 200.8	ug/L	0.54 J	0.54 J	0.44 J	0.46 J	0.46 J	0.46 J	0.38 J	0.28 J	0.49 J	0.62 J	0.81 J	0.91 J
Arsenic, Dissolved	EPA 200.8	ug/L	0.10 J	0.082 J	0.061 J	<1.0	0.061 J	0.071 J	<1.0	0.066 J	<1.0	<1.0	0.050 J	<1.0
Cadmium	EPA 200.8	ug/L	19.5	18.6	18.2	18.6	18.7	18.8	17.2	19.8	19.8	20.9	20.5	20.4
Cadmium, Dissolved	EPA 200.8	ug/L	18.2	16.8	17.4	16.0	16.9	17.9	15.5	18.6	18.4	18.8	17.4	17.7
Calcium	EPA 200.7	ug/L	235,000	228,000	225,000	236,000	225,000	227,000	230,000	238,000	227,000	232,000	213,000	215,000
Calcium, Dissolved	EPA 200.7	ug/L	225,000	224,000	222,000	222,000	226,000	227,000	226,000	234,000	228,000	234,000	215,000	215,000
Chromium	EPA 200.8	ug/L	0.48 J	0.29 J	0.62 J	0.38 J	0.43 J	0.29 J	<1.0	<1.0	0.14 J	0.26 J	0.65 J	0.76 J
Chromium, Dissolved	EPA 200.8	ug/L	0.52 JY	<1.0	0.10 JY	0.16 JY	0.14 JY	0.10 JY	<1.0	<1.0	<1.0	<1.0	0.18 J	0.14 J
Cobalt	EPA 200.8	ug/L	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.3	2.4	2.4	2.4
Cobalt, Dissolved	EPA 200.8	ug/L	3.6	4.2	4.0	3.4	3.7	3.9	4.3	3.9	3.8	4.0	4.1	3.8
Copper	EPA 200.8	ug/L	83.0	78.6	75.0	74.2	73.0	74.0	69.4	60.3	95.3	116	136	150
Copper, Dissolved	EPA 200.8	ug/L	6.4	4.3	5.4	3.7	4.7	5.6	4.9	4.4	5.8	6.2	5.4	7.6
Iron	EPA 200.7	ug/L	4,690	4,560	4,280	4,370	4,020	4,170	3,810	4,030	4,910	5,730	6,280	6,670
Iron, Dissolved	EPA 200.7	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Lead	EPA 200.8	ug/L	5.2	5.1	4.5	4.5	4.2	4.6	4.0	3.5	6.0	7.6	9.5	10.6
Lead, Dissolved	EPA 200.8	ug/L	0.28 JY	0.23 JY	0.25 JY	0.25 JY	0.25 JY	0.32 JY	0.22 JY	0.22 JY	0.057 J	<1.0	<1.0	0.095 J
Lithium	EPA 200.7	ug/L	23.3	23.8	23.5	25.2	24.4	23.8	25.9	24.6	24.4	25.0	24.0	25.4
Lithium, Dissolved	EPA 200.7	ug/L	26.9	26.1	26.4	26.3	26.4	26.5	26.1	24.3	25.1	26.0	25.0	25.1
Magnesium	EPA 200.7	ug/L	19,100	18,300	18,600	19,300	18,700	18,800	19,200	20,000	19,200	19,500	17,900	17,800
Magnesium, Dissolved	EPA 200.7	ug/L	18,800	18,300	18,500	18,600	18,800	19,200	19,100	20,500	19,000	19,500	17,900	17,800
Manganese	EPA 200.8	ug/L	1,760	1,700	1,680	1,740	1,740	1,740	1,640	1,820	1,780	1,830	1,800	1,820
Manganese, Dissolved	EPA 200.8	ug/L	1,780	1,760	1,750	1,750	1,760	1,810	1,680	1,860	1,820	1,850	1,840	1,800
Mercury	EPA 245.1	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Mercury, Dissolved	EPA 245.1	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Nickel	EPA 200.8	ug/L	4.2	3.9	3.9	4.1	4.2	4.1	3.5	3.8	3.8	3.8	4.0	3.9
Nickel, Dissolved	EPA 200.8	ug/L	4.3	4.0	4.1	3.9	4.0	4.1	3.8	4.1	4.1	4.3	4.1	4.3
Potassium	EPA 200.7	ug/L	4,640	4,960	4,910	4,890	4,550	4,330	4,810	4,050	3,940	4,000	3,900	4,000
Potassium, Dissolved	EPA 200.7	ug/L	5,070	5,400	5,320	5,090	4,940	4,820	4,840	4,060	4,060	4,080	3,890	3,890
Selenium	EPA 200.8	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Selenium, Dissolved	EPA 200.8	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Silicon	EPA 200.7	ug/L	7,840	7,540	7,470	7,750	7,400	7,480	7,550	7,860	7,550	7,860	7,420	7,550
Silicon, Dissolved	EPA 200.7	ug/L	6,750	6,560	6,550	6,480	6,540	6,810	7,030	7,410	7,130	7,280	6,760	6,810
Sodium	EPA 200.7	ug/L	28,200	31,400	33,400	34,000	32,800	31,000	38,000	25,800	25,500	25,600	23,200	23,400
Sodium, Dissolved	EPA 200.7	ug/L	30,400	34,000	36,200	35,700	35,100	34,100	37,900	26,000	26,100	26,200	23,300	23,000
Zinc	EPA 200.7	ug/L	3,710	3,540	3,510	3,560	3,550	3,640	3,460	3,780	3,790	3,860	3,530	3,570
Zinc, Dissolved	EPA 200.7	ug/L	3,400	3,140	3,250	2,970	3,190	3,370	3,080	3,420	3,470	3,470	3,060	3,170
General Chemicals														
Alkalinity, Bicarbonate (CaCO3)	SM 2320B	mg/L	97.0	94.9	106	109	104	104	113	103	87.5	89.0	84.4	90.6
Alkalinity, Carbonate (CaCO3)	SM 2320B	mg/L	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
Alkalinity, Hydroxide (CaCO3)	SM 2320B	mg/L	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
Alkalinity, Total as CaCO3	SM 2320B	mg/L	97.0	94.9	106	109	104	104	113	103	87.5	89.0	84.4	90.6
Bromide	EPA 300.0	mg/L	0.61 J	0.53 J	0.62 J	0.60 J	0.48 J	0.60 J	<1.0	<1.0	0.67 J	0.67 J	<1.0	<1.0
Chloride	EPA 300.0	mg/L	0.89 J	0.90 J	0.88 J	0.88 J	0.87 J	0.89 J	0.88 J	0.68 J	0.89 JY	0.88 JY	0.73 J	0.63 J
Fluoride	EPA 300.0	mg/L	2.3	2.2	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.2	2.2
Sulfate	EPA 300.0	mg/L	647	645	644	651	649	636	749	719	665	641	752	771

TABLE B-4
DR-3A ANALYTICAL DATA
2013 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

Sample ID			DR3A1307150400	DR3A1307160400	DR3A1307170400	DR3A1307180400	DR3A1307190400	DR3A1307200400	DR3A1307210400	DR3A1307220400	DR3A1307230400	DR3A1307240400	DR3A1307250400	DR3A1307261200
Sample Date & Time			7/15/13 4:00	7/16/13 4:00	7/17/13 4:00	7/18/13 4:00	7/19/13 4:00	7/20/13 4:00	7/21/13 4:00	7/22/13 4:00	7/23/13 4:00	7/24/13 4:00	7/25/13 4:00	7/26/13 12:00
Parameter	Method	Units												
Metals														
Aluminum	EPA 200.7	ug/L	592	711	738	760	779	759	787	835	775	809	843	808
Aluminum, Dissolved	EPA 200.7	ug/L	52.2 J	42.6 J	52.9 J	60.2 J	45.1 J	35.9 J	40.7 J	30.8 J	52.8 J	33.7 J	51.7 J	54.5 J
Arsenic	EPA 200.8	ug/L	0.80 J	1.1	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.2	1.3	1.2
Arsenic, Dissolved	EPA 200.8	ug/L	<1.0	0.051 J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.071 J	0.12 J
Cadmium	EPA 200.8	ug/L	20.1	21.0	22.1	21.8	22.0	21.0	21.8	22.0	21.0	21.5	21.2	21.2
Cadmium, Dissolved	EPA 200.8	ug/L	16.6	18.9	18.9	19.1	19.7	17.0	18.2	19.0	18.5	18.6	18.9	19.3
Calcium	EPA 200.7	ug/L	215,000	238,000	234,000	234,000	238,000	230,000	228,000	228,000	219,000	235,000	239,000	233,000
Calcium, Dissolved	EPA 200.7	ug/L	221,000	238,000	239,000	236,000	249,000	228,000	225,000	227,000	227,000	225,000	237,000	237,000
Chromium	EPA 200.8	ug/L	0.27 J	0.49 JY	0.74 JY	0.59 JY	0.55 JY	0.84 J	0.47 J	0.47 J	0.50 J	0.41 J	0.42 J	0.39 J
Chromium, Dissolved	EPA 200.8	ug/L	<1.0	0.11 JY	0.41 JY	0.24 JY	0.34 JY	0.36 J	0.080 J	<1.0	0.34 J	0.17 J	<1.0	<1.0
Cobalt	EPA 200.8	ug/L	2.4	2.5	2.5	2.6	2.5	2.4	2.4	2.5	2.4	2.4	2.4	2.3
Cobalt, Dissolved	EPA 200.8	ug/L	4.3	4.3	4.4	4.1	4.1	3.8	4.1	3.7	3.4	3.9	2.9	3.0
Copper	EPA 200.8	ug/L	131	154	162	174	172	180	189	202	187	181	188	185
Copper, Dissolved	EPA 200.8	ug/L	4.7	8.5	9.7	9.2	9.2	5.7	7.7	8.3	9.1	10.1	8.3	11.0
Iron	EPA 200.7	ug/L	6,160	7,210	7,180	7,490	7,570	7,320	7,420	8,410	7,270	7,750	7,920	7,680
Iron, Dissolved	EPA 200.7	ug/L	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	16.0 JY	<50.0	<50.0	<50.0	<50.0	487
Lead	EPA 200.8	ug/L	8.9	12.0	12.5	12.8	12.8	13.4	13.8	14.9	14.0	14.0	14.3	14.0
Lead, Dissolved	EPA 200.8	ug/L	0.032 J	0.16 JY	0.17 JY	0.24 JY	0.42 JY	<1.0	<1.0	<1.0	<1.0	0.29 JY	0.22 JY	0.21 JY
Lithium	EPA 200.7	ug/L	24.9	26.1	29.7	25.7	26.5	24.9	24.4	25.4	23.7	23.7	24.2	23.2
Lithium, Dissolved	EPA 200.7	ug/L	26.2	27.3 Y	27.0 Y	24.9 Y	27.4 Y	24.2	24.2	23.4	23.3	23.5	23.3	24.6
Magnesium	EPA 200.7	ug/L	17,800	19,200	18,900	19,100	19,600	19,600	19,600	19,500	18,600	19,600	19,800	19,000
Magnesium, Dissolved	EPA 200.7	ug/L	18,400	19,000	19,100	19,400	20,700	19,500	19,600	19,500	19,400	19,000	19,800	20,000
Manganese	EPA 200.8	ug/L	1,810	1,830	1,870	1,880	1,870	1,860	1,920	1,910	1,860	1,870	1,890	1,860
Manganese, Dissolved	EPA 200.8	ug/L	1,820	1,840	1,830	1,860	1,880	1,830	1,840	1,810	1,820	1,840	1,890	1,880
Mercury	EPA 245.1	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Mercury, Dissolved	EPA 245.1	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Nickel	EPA 200.8	ug/L	3.9	4.1	3.9	4.3	4.1	2.9	2.9	3.1	3.1	2.6	2.8	2.7
Nickel, Dissolved	EPA 200.8	ug/L	4.4	4.4	4.4	4.2	4.4	4.2	4.2	4.0	4.2	3.0	3.3	2.9
Potassium	EPA 200.7	ug/L	3,850	3,720	3,780	3,710	3,760	3,800	3,730	3,700	3,590	3,580	3,530	3,440
Potassium, Dissolved	EPA 200.7	ug/L	3,920	3,760	3,810	3,730	3,890	3,620	3,720	3,540	3,520	3,440	3,640	3,540
Selenium	EPA 200.8	ug/L	<1.0	0.25 JY	0.24 JY	0.18 JY	0.22 JY	0.25 J	0.15 J	0.26 J	0.19 J	0.24 J	0.20 J	0.18 J
Selenium, Dissolved	EPA 200.8	ug/L	<1.0	<1.0	0.22 J	0.18 J	0.14 J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Silicon	EPA 200.7	ug/L	7,410	8,180	8,060	8,110	8,220	7,920	8,000	8,040	7,570	8,320	8,400	8,220
Silicon, Dissolved	EPA 200.7	ug/L	6,880	7,510	7,500	7,400	7,830	6,790	6,950	6,970	6,950	7,220	7,600	7,780
Sodium	EPA 200.7	ug/L	23,200	22,100	22,000	21,800	21,600	21,500	21,100	20,800	20,000	19,800	19,900	19,000
Sodium, Dissolved	EPA 200.7	ug/L	23,500	22,500	22,600	21,600	22,400	20,700	21,100	19,800	19,400	19,100	19,800	19,300
Zinc	EPA 200.7	ug/L	3,500	3,810	3,770	3,900	3,860	3,950	4,030	4,010	3,790	4,000	4,110	3,920
Zinc, Dissolved	EPA 200.7	ug/L	2,990	3,490	3,510	3,440	3,730	3,220	3,460	3,480	3,500	3,460	3,630	3,630
General Chemicals														
Alkalinity, Bicarbonate (CaCO3)	SM 2320B	mg/L	92.6	115	96.8	101	108	89.2	94.3	101	99.5	123	112	119
Alkalinity, Carbonate (CaCO3)	SM 2320B	mg/L	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
Alkalinity, Hydroxide (CaCO3)	SM 2320B	mg/L	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
Alkalinity, Total as CaCO3	SM 2320B	mg/L	92.6	115	96.8	101	108	89.2	94.3	101	99.5	123	112	119
Bromide	EPA 300.0	mg/L	<1.0	<1.0	<1.0	0.77 J	0.65 J	<1.0	<1.0	0.51 J	0.49 J	<1.0	<1.0	<1.0
Chloride	EPA 300.0	mg/L	0.61 J	1.0	1.0	1.0	0.90 J	0.97 J	0.96 J	0.98 J	0.87 J	0.88 J	0.89 J	0.88 J
Fluoride	EPA 300.0	mg/L	2.2	2.5	2.5	2.3	2.1	2.3	2.3	2.3	2.1	2.5	2.4	2.5
Sulfate	EPA 300.0	mg/L	811	672	658	719	700	632	665	647	659	701	672	645

TABLE B-4
DR-3A ANALYTICAL DATA
2013 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

Sample ID			DR3A1307270400	DR3A1307280400	DR3A1307291200	DUP1307291200	DR3A1307300400	DR3A1308011200	DR3A1308051100	DR3A1308080935	DR3A1308121115	DR3A1308151025	DR3A1308191010	DR3A1308261105
Sample Date & Time			7/27/13 4:00	7/28/13 4:00	7/29/13 12:00	7/29/13 12:00	7/30/13 4:00	8/1/13 12:00	8/5/13 11:00	8/8/13 9:35	8/12/13 11:15	8/15/13 10:25	8/19/13 10:10	8/26/13 11:05
Parameter	Method	Units												
Metals														
Aluminum	EPA 200.7	ug/L	1000	886	890	927	778	844	940	910	992	972	834	777
Aluminum, Dissolved	EPA 200.7	ug/L	74.7 J	75.4	92.9	79.1	74.1 J	71.1 J	85.0	89.2	99.7	90.4	98.4	107
Arsenic	EPA 200.8	ug/L	1.6	1.4	1.4	1.3	1.3	1.4	1.2	1.4	1.5	1.8	1.3	1.3
Arsenic, Dissolved	EPA 200.8	ug/L	0.073 J	0.10 J	0.13 J	0.18 J	0.16 J	0.16 J	<1.0	0.072 J	0.069 J	0.20 J	<1.0	0.087 J
Cadmium	EPA 200.8	ug/L	21.7	21.2	20.5	21.0	20.9	21.0	21.8	21.2	21.6	21.4	21.2	20.7
Cadmium, Dissolved	EPA 200.8	ug/L	17.0	17.8	18.9	18.7	18.2	19.1	19.9	19.6	19.6	19.5	19.7	19.2
Calcium	EPA 200.7	ug/L	227,000	233,000	235,000	241,000	240,000	241,000	257,000	243,000	248,000	252,000	252,000	239,000
Calcium, Dissolved	EPA 200.7	ug/L	239,000	234,000	234,000	234,000	238,000	239,000	251,000	250,000	243,000	235,000	244,000	237,000
Chromium	EPA 200.8	ug/L	0.55 JY	0.53 JY	0.54 JY	0.87 JY	0.60 JY	0.70 JY	0.72 J	0.60 J	0.64 J	0.50 J	0.52 J	0.66 JY
Chromium, Dissolved	EPA 200.8	ug/L	<1.0	<1.0	<1.0	<1.0	0.17 JY	0.19 JY	<1.0	0.13 J	0.16 J	0.25 JY	<1.0	0.19 J
Cobalt	EPA 200.8	ug/L	2.7	2.4	2.4	2.4	2.7	2.7	2.6	2.6	2.6	2.6	2.5	2.6
Cobalt, Dissolved	EPA 200.8	ug/L	2.6	2.8	2.7	2.9	3.0	2.8	2.8	3.1	3.0	2.7	3.6	3.0
Copper	EPA 200.8	ug/L	201	186	183	187	171	187	198	188	200	196	160	143
Copper, Dissolved	EPA 200.8	ug/L	5.5	7.0	12.6	10.3	7.7	9.3	16.0	14.2	14.6	14.8	13.4	11.5
Iron	EPA 200.7	ug/L	9,960	8,150	8,250	8,450	8,080	8,250	8,640	8,580	9,160	8,740	7,730	6,950
Iron, Dissolved	EPA 200.7	ug/L	<50.0	<50.0	529	504	<50.0	139	1,090	1,090	1,030	884	937	813
Lead	EPA 200.8	ug/L	23.6	14.8	14.6	14.9	13.8	14.2	16.1	15.4	16.9	16.2	48.3	14.0
Lead, Dissolved	EPA 200.8	ug/L	0.23 JY	0.22 JY	0.45 JY	0.25 JY	<1.0	0.038 J	<1.0	0.51 JY	0.29 JY	0.063 JY	0.071 JY	0.050 JY
Lithium	EPA 200.7	ug/L	22.2	25.4	25.1	23.4	24.7	26.6	26.7	24.6	24.5	25.2	23.6	28.6
Lithium, Dissolved	EPA 200.7	ug/L	23.2	25.4	23.2	23.6	24.8	25.8	24.5	25.6	26.3	23.5	23.0	22.8
Magnesium	EPA 200.7	ug/L	17,600	18,300	18,900	19,500	19,300	19,500	21,000	19,900	20,200	20,600	20,400	18,900
Magnesium, Dissolved	EPA 200.7	ug/L	19,200	18,400	18,600	18,100	19,200	19,700	20,900	20,200	19,900	18,200	20,000	18,600
Manganese	EPA 200.8	ug/L	2,170	1,910	1,850	1,880	1,880	1,880	1,870	1,820	1,860	2,050	1,820	1,840
Manganese, Dissolved	EPA 200.8	ug/L	1,870	1,880	1,860	1,860	1,840	1,870	1,840	1,880	1,860	1,870	1,840	1,820
Mercury	EPA 245.1	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20 Y	<0.20	<0.20	<0.20	<0.20	<0.20
Mercury, Dissolved	EPA 245.1	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Nickel	EPA 200.8	ug/L	3.1	2.8	3.0	6.1	4.2	4.2	4.2	4.1	4.1	4.1	4.8	4.0
Nickel, Dissolved	EPA 200.8	ug/L	2.4	2.3	2.3	2.4	4.1	4.1	4.0	4.7	4.4	4.2	4.4	4.0
Potassium	EPA 200.7	ug/L	3,320	3,440	3,420	3,490	3,360	3,390	3,600	3,480	3,560	3,400	3,400	3,410
Potassium, Dissolved	EPA 200.7	ug/L	3,510	3,480	3,430	3,430	3,360	3,360	3,500	3,600	3,470	3,170	3,300	3,360
Selenium	EPA 200.8	ug/L	0.19 J	0.24 J	0.24 J	0.21 J	0.23 J	0.18 J	<1.0	<1.0	<1.0	0.24 J	0.28 J	0.16 J
Selenium, Dissolved	EPA 200.8	ug/L	<1.0	<1.0	<1.0	<1.0	0.14 J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Silicon	EPA 200.7	ug/L	8,020	8,060	8,110	8,330	8,210	8,300	8,460	8,630	8,960	8,690	8,720	7,690
Silicon, Dissolved	EPA 200.7	ug/L	7,220	7,240	7,340	7,310	7,400	7,480	7,560	8,170	8,030	7,490	7,730	7,100
Sodium	EPA 200.7	ug/L	18,000	18,300	18,100	18,500	18,600	18,400	17,600	16,400	16,300	15,900	15,700	15,500
Sodium, Dissolved	EPA 200.7	ug/L	19,000	18,600	18,100	18,200	18,100	18,400	17,200	16,800	16,100	15,300	15,400	15,600
Zinc	EPA 200.7	ug/L	3,830	3,930	3,780	3,960	3,880	3,890	4,270	4,060	4,140	4,230	4,080	3,800
Zinc, Dissolved	EPA 200.7	ug/L	3,180	3,320	3,400	3,400	3,350	3,440	3,800	3,700	3,680	3,480	3,720	3,380
General Chemicals														
Alkalinity, Bicarbonate (CaCO3)	SM 2320B	mg/L	115	113	121	116	120	124	126	132	139	139	148	153
Alkalinity, Carbonate (CaCO3)	SM 2320B	mg/L	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
Alkalinity, Hydroxide (CaCO3)	SM 2320B	mg/L	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
Alkalinity, Total as CaCO3	SM 2320B	mg/L	115	113	121	116	120	124	126	132	139	139	148	153
Bromide	EPA 300.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloride	EPA 300.0	mg/L	0.90 J	0.89 J	0.90 J	0.89 J	0.89 J	0.88 J	0.91 J	0.90 J	0.91 J	0.87 J	0.91 J	0.93 J
Fluoride	EPA 300.0	mg/L	2.4	2.3	2.3	2.2	2.5	2.4	2.2	2.5	2.3	2.4	2.3	2.2
Sulfate	EPA 300.0	mg/L	676	661	676	669	623	613	872	621	701	617	766	662

TABLE B-4
DR-3A ANALYTICAL DATA
2013 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

Sample ID		DR3A1309031330	DR3A1309090900	DR3A1309161025
Sample Date & Time		9/3/13 13:30	9/9/13 9:00	9/16/13 10:25
Parameter	Method	Units		
Metals				
Aluminum	EPA 200.7	ug/L	703	390
Aluminum, Dissolved	EPA 200.7	ug/L	102	112
Arsenic	EPA 200.8	ug/L	1.3	0.68 J
Arsenic, Dissolved	EPA 200.8	ug/L	0.10 J	<1.0
Cadmium	EPA 200.8	ug/L	21.6	21.2
Cadmium, Dissolved	EPA 200.8	ug/L	19.7	20.0
Calcium	EPA 200.7	ug/L	231,000	233,000
Calcium, Dissolved	EPA 200.7	ug/L	233,000	231,000
Chromium	EPA 200.8	ug/L	0.46 J	0.42 J
Chromium, Dissolved	EPA 200.8	ug/L	0.23 J	0.15 J
Cobalt	EPA 200.8	ug/L	2.6	2.6
Cobalt, Dissolved	EPA 200.8	ug/L	4.3	3.5
Copper	EPA 200.8	ug/L	141	129
Copper, Dissolved	EPA 200.8	ug/L	12.4	14.9
Iron	EPA 200.7	ug/L	6,530	6,760
Iron, Dissolved	EPA 200.7	ug/L	952	1,640
Lead	EPA 200.8	ug/L	13.0	12.0
Lead, Dissolved	EPA 200.8	ug/L	0.19 JY	0.070 J
Lithium	EPA 200.7	ug/L	30.9 Y	24.2
Lithium, Dissolved	EPA 200.7	ug/L	30.5	24.0
Magnesium	EPA 200.7	ug/L	19,900	18,200
Magnesium, Dissolved	EPA 200.7	ug/L	20,200	18,300
Manganese	EPA 200.8	ug/L	1,890	1,910
Manganese, Dissolved	EPA 200.8	ug/L	1,860	1,920
Mercury	EPA 245.1	ug/L	<0.20	<0.20
Mercury, Dissolved	EPA 245.1	ug/L	<0.20	<0.20
Nickel	EPA 200.8	ug/L	2.8	4.0
Nickel, Dissolved	EPA 200.8	ug/L	2.8	4.3
Potassium	EPA 200.7	ug/L	3,100	3,100
Potassium, Dissolved	EPA 200.7	ug/L	3,180	3,220
Selenium	EPA 200.8	ug/L	<1.0	<1.0
Selenium, Dissolved	EPA 200.8	ug/L	<1.0	<1.0
Silicon	EPA 200.7	ug/L	7,800	7,940
Silicon, Dissolved	EPA 200.7	ug/L	7,300	7,470
Sodium	EPA 200.7	ug/L	13,200	13,900
Sodium, Dissolved	EPA 200.7	ug/L	13,200	14,000
Zinc	EPA 200.7	ug/L	4,060	3,440
Zinc, Dissolved	EPA 200.7	ug/L	3,780	3,380
General Chemicals				
Alkalinity, Bicarbonate (CaCO3)	SM 2320B	mg/L	139	147
Alkalinity, Carbonate (CaCO3)	SM 2320B	mg/L	<20.0	<20.0
Alkalinity, Hydroxide (CaCO3)	SM 2320B	mg/L	<20.0	<20.0
Alkalinity, Total as CaCO3	SM 2320B	mg/L	139	147
Bromide	EPA 300.0	mg/L	<1.0	<1.0
Chloride	EPA 300.0	mg/L	0.95 JY	0.90 J
Fluoride	EPA 300.0	mg/L	2.4	2.3
Sulfate	EPA 300.0	mg/L	617	702

TABLE B-4
DR-3A ANALYTICAL DATA
2013 INJECTION TEST
Rico-Argentine Mine Site
Dolores County, Colorado

Notes

Samples were collected at DR-3A (St. Louis Tunnel discharge).

Abbreviations

CaCO₃ = calcium carbonate

J = Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

mg/L = milligrams per liter

NM = not measured

ug/L = micrograms per liter

Y = Dissolved result is greater than the total. Data is within laboratory control limits.

APPENDIX C

Laboratory Analytical Reports (on CD)

October 01, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO 517 SHAFT GEOPHYSICAL CHR
Pace Project No.: 60128492

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on September 07, 2012. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414

A2LA Certification #: 2926.01

Alaska Certification #: UST-078

Alaska Certification #MN00064

Arizona Certification #: AZ-0014

Arkansas Certification #: 88-0680

California Certification #: 01155CA

Colorado Certification #Pace

Connecticut Certification #: PH-0256

EPA Region 8 Certification #: Pace

Florida/NELAP Certification #: E87605

Georgia Certification #: 959

Hawaii Certification #Pace

Idaho Certification #: MN00064

Illinois Certification #: 200011

Kansas Certification #: E-10167

Louisiana Certification #: 03086

Louisiana Certification #: LA080009

Maine Certification #: 2007029

Maryland Certification #: 322

Michigan DEQ Certification #: 9909

Minnesota Certification #: 027-053-137

Mississippi Certification #: Pace

Montana Certification #: MT CERT0092

Nevada Certification #: MN_00064

Nebraska Certification #: Pace

New Jersey Certification #: MN-002

New York Certification #: 11647

North Carolina Certification #: 530

North Dakota Certification #: R-036

North Dakota Certification #: R-036A

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Certification #: MN200001

Oregon Certification #: MN300001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification

Tennessee Certification #: 02818

Texas Certification #: T104704192

Utah Certification #: MN00064

Virginia/DCLS Certification #: 002521

Virginia/VELAP Certification #: 460163

Washington Certification #: C754

West Virginia Certification #: 382

Wisconsin Certification #: 999407970

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60128492001	RICO517 GEO 455 120905 1815	Water	09/05/12 18:15	09/07/12 10:30
60128492002	RICO517 GEO 495 120905 1715	Water	09/05/12 17:15	09/07/12 10:30
60128492003	RICOSLT DR3 120905 1755	Water	09/05/12 17:55	09/07/12 10:30
60128492004	RICOBLAINE COFFERD 120905 1747	Water	09/05/12 17:47	09/07/12 10:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60128492001	RICO517 GEO 455 120905 1815	EPA 200.8	RJS	26	PASI-M
		EPA 200.8	RJS	24	PASI-M
		EPA 245.1	TEM	1	PASI-M
		EPA 245.1	TEM	1	PASI-M
		SM 2320B	DJR	3	PASI-K
		SM 2540C	NDL	1	PASI-K
		SM 2540D	NDL	1	PASI-K
		SM 4500-S-2 D	NDL	1	PASI-K
		EPA 300.0	OL	4	PASI-K
		EPA 353.2	NDL	1	PASI-K
		SM 5310C	JML	1	PASI-K
60128492002	RICO517 GEO 495 120905 1715	EPA 200.8	RJS	26	PASI-M
		EPA 200.8	RJS	24	PASI-M
		EPA 245.1	TEM	1	PASI-M
		EPA 245.1	TEM	1	PASI-M
		SM 4500-S-2 D	NDL	1	PASI-K
60128492003	RICOSLT DR3 120905 1755	EPA 200.8	RJS	26	PASI-M
		EPA 200.8	RJS	24	PASI-M
		EPA 245.1	TEM	1	PASI-M
		EPA 245.1	TEM	1	PASI-M
		SM 2320B	DJR	3	PASI-K
		SM 2540C	NDL	1	PASI-K
		SM 2540D	NDL	1	PASI-K
		SM 4500-S-2 D	NDL	1	PASI-K
		EPA 300.0	OL	4	PASI-K
		EPA 353.2	NDL	1	PASI-K
60128492004	RICOBLAINE COFFERD 120905 1747	SM 5310C	JML	1	PASI-K
		EPA 200.8	RJS	26	PASI-M
		EPA 200.8	RJS	24	PASI-M
		EPA 245.1	TEM	1	PASI-M
		EPA 245.1	TEM	1	PASI-M
		SM 2320B	DJR	3	PASI-K
		SM 2540C	NDL	1	PASI-K
		SM 2540D	NDL	1	PASI-K
		SM 4500-S-2 D	NDL	1	PASI-K
		EPA 300.0	OL	4	PASI-K
		EPA 353.2	NDL	1	PASI-K

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SAMPLE ANALYTE COUNT

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		SM 5310C	JML	1	PASI-K

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PROJECT NARRATIVE

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: October 01, 2012

General Information:

4 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

QC Batch: ICPM/35135

CH: The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.

- RICOBLAINE COFFERD 120905 1747 (Lab ID: 60128492004)
- Beryllium

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: ICPM/35135

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- RICOBLAINE COFFERD 120905 1747 (Lab ID: 60128492004)
- Silver
- Barium
- Antimony

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MS (Lab ID: 1286398)
- Calcium
- Manganese
- Zinc

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PROJECT NARRATIVE

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: October 01, 2012

Analyte Comments:

QC Batch: ICPM/35135

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MSD (Lab ID: 1286399)
 - Calcium
 - Manganese
 - Zinc

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PROJECT NARRATIVE

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: October 01, 2012

General Information:

4 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

QC Batch: ICPM/35134

CH: The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.

- BLANK (Lab ID: 1286205)
 - Beryllium, Dissolved
 - Lithium, Dissolved

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: ICPM/35134

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- RICOBLAINE COFFERD 120905 1747 (Lab ID: 60128492004)
 - Silver, Dissolved
 - Barium, Dissolved
 - Molybdenum, Dissolved
 - Antimony, Dissolved
 - Thallium, Dissolved

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MS (Lab ID: 1286207)
 - Calcium, Dissolved

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PROJECT NARRATIVE

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: October 01, 2012

Analyte Comments:

QC Batch: ICPM/35134

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MS (Lab ID: 1286207)
 - Manganese, Dissolved
 - Zinc, Dissolved
- MSD (Lab ID: 1286208)
 - Calcium, Dissolved
 - Manganese, Dissolved
 - Zinc, Dissolved

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PROJECT NARRATIVE

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: October 01, 2012

General Information:

4 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

Method: EPA 245.1

Description: 245.1 Mercury, Dissolved

Client: BP AMEC

Date: October 01, 2012

General Information:

4 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: October 01, 2012

General Information:

3 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

Method: SM 2540C

Description: 2540C Total Dissolved Solids

Client: BP AMEC

Date: October 01, 2012

General Information:

3 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

Method: SM 2540D

Description: 2540D Total Suspended Solids

Client: BP AMEC

Date: October 01, 2012

General Information:

3 samples were analyzed for SM 2540D. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: RICO 517 SHAFT GEOPHYSICAL CHR
Pace Project No.: 60128492

Method: SM 4500-S-2 D
Description: 4500S2D Sulfide, Total
Client: BP AMEC
Date: October 01, 2012

General Information:

4 samples were analyzed for SM 4500-S-2 D. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: October 01, 2012

General Information:

3 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: RICO 517 SHAFT GEOPHYSICAL CHR
Pace Project No.: 60128492

Method: EPA 353.2
Description: 353.2 Nitrogen, NO₂/NO₃ unpres
Client: BP AMEC
Date: October 01, 2012

General Information:

3 samples were analyzed for EPA 353.2. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: WETA/21562

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60128492004

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1056672)
- Nitrogen, Nitrate

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: WETA/21562

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- MS (Lab ID: 1056672)
 - Nitrogen, Nitrate
- RICOBLAINE COFFERD 120905 1747 (Lab ID: 60128492004)
 - Nitrogen, Nitrate

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PROJECT NARRATIVE

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

Method: SM 5310C

Description: 5310C TOC

Client: BP AMEC

Date: October 01, 2012

General Information:

3 samples were analyzed for SM 5310C. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

Sample: RICO517 GEO 455 120905 **Lab ID:** 60128492001 **Collected:** 09/05/12 18:15 **Received:** 09/07/12 10:30 **Matrix:** Water
1815

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS		Analytical Method: EPA 200.8						
Aluminum	2780	ug/L	4.0	1	09/12/12 19:23	09/19/12 13:16	7429-90-5	M6
Antimony	ND	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:16	7440-36-0	
Arsenic	0.95	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:16	7440-38-2	
Barium	22.2	ug/L	0.30	1	09/12/12 19:23	09/19/12 13:16	7440-39-3	
Beryllium	0.84	ug/L	0.20	1	09/12/12 19:23	09/19/12 13:16	7440-41-7	
Cadmium	83.6	ug/L	0.080	1	09/12/12 19:23	09/19/12 13:16	7440-43-9	
Calcium	327000	ug/L	400	20	09/12/12 19:23	09/19/12 10:42	7440-70-2	M6
Chromium	1.3	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:16	7440-47-3	
Cobalt	7.2	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:16	7440-48-4	
Copper	344	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:16	7440-50-8	
Iron	5300	ug/L	50.0	1	09/12/12 19:23	09/19/12 13:16	7439-89-6	
Lead	24.8	ug/L	0.10	1	09/12/12 19:23	09/19/12 13:16	7439-92-1	
Lithium	30.6	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:16	7439-93-2	
Magnesium	30800	ug/L	100	20	09/12/12 19:23	09/19/12 10:42	7439-95-4	
Manganese	4810	ug/L	10.0	20	09/12/12 19:23	09/19/12 10:42	7439-96-5	M6
Molybdenum	5.2	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:16	7439-98-7	
Nickel	14.4	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:16	7440-02-0	
Potassium	1590	ug/L	20.0	1	09/12/12 19:23	09/19/12 13:16	7440-09-7	
Selenium	0.52	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:16	7782-49-2	
Silica	18200	ug/L	1070	20	09/12/12 19:23	09/19/12 10:42	7631-86-9	
Silver	ND	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:16	7440-22-4	
Sodium	9210	ug/L	50.0	1	09/12/12 19:23	09/19/12 13:16	7440-23-5	M6
Thallium	ND	ug/L	0.10	1	09/12/12 19:23	09/19/12 13:16	7440-28-0	
Total Hardness by 2340B	943000	ug/L	1420	20	09/12/12 19:23	09/19/12 10:42		
Vanadium	0.34	ug/L	0.10	1	09/12/12 19:23	09/19/12 13:16	7440-62-2	
Zinc	15200	ug/L	500	100	09/12/12 19:23	09/19/12 10:46	7440-66-6	M6

200.8 MET ICPMS, Dissolved

Analytical Method: EPA 200.8

Aluminum, Dissolved	1960	ug/L	4.0	1	09/12/12 19:25	09/19/12 13:47	7429-90-5	M6
Antimony, Dissolved	ND	ug/L	0.50	1	09/12/12 19:25	09/19/12 13:47	7440-36-0	
Arsenic, Dissolved	ND	ug/L	0.50	1	09/12/12 19:25	09/19/12 13:47	7440-38-2	
Barium, Dissolved	20.4	ug/L	0.30	1	09/12/12 19:25	09/19/12 13:47	7440-39-3	
Beryllium, Dissolved	0.67	ug/L	0.20	1	09/12/12 19:25	09/19/12 13:47	7440-41-7	
Cadmium, Dissolved	84.3	ug/L	0.080	1	09/12/12 19:25	09/19/12 13:47	7440-43-9	
Calcium, Dissolved	336000	ug/L	400	20	09/12/12 19:25	09/19/12 11:46	7440-70-2	M6
Chromium, Dissolved	ND	ug/L	0.50	1	09/12/12 19:25	09/19/12 13:47	7440-47-3	
Cobalt, Dissolved	7.1	ug/L	0.50	1	09/12/12 19:25	09/19/12 13:47	7440-48-4	
Copper, Dissolved	248	ug/L	0.50	1	09/12/12 19:25	09/19/12 13:47	7440-50-8	
Iron, Dissolved	648	ug/L	50.0	1	09/12/12 19:25	09/19/12 13:47	7439-89-6	
Lead, Dissolved	1.6	ug/L	0.10	1	09/12/12 19:25	09/19/12 13:47	7439-92-1	
Lithium, Dissolved	31.2	ug/L	0.50	1	09/12/12 19:25	09/19/12 13:47	7439-93-2	
Magnesium, Dissolved	32200	ug/L	100	20	09/12/12 19:25	09/19/12 11:46	7439-95-4	M6
Manganese, Dissolved	5010	ug/L	10.0	20	09/12/12 19:25	09/19/12 11:46	7439-96-5	M6
Molybdenum, Dissolved	2.1	ug/L	0.50	1	09/12/12 19:25	09/19/12 13:47	7439-98-7	
Nickel, Dissolved	15.6	ug/L	0.50	1	09/12/12 19:25	09/19/12 13:47	7440-02-0	
Potassium, Dissolved	1600	ug/L	20.0	1	09/12/12 19:25	09/19/12 13:47	7440-09-7	

Date: 10/01/2012 01:42 PM

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ANALYTICAL RESULTS

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

Sample: RICO517 GEO 455 120905 **Lab ID:** 60128492001 Collected: 09/05/12 18:15 Received: 09/07/12 10:30 Matrix: Water
1815

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved		Analytical Method: EPA 200.8						
Selenium, Dissolved	0.51	ug/L	0.50	1	09/12/12 19:25	09/19/12 13:47	7782-49-2	
Silver, Dissolved	ND	ug/L	0.50	1	09/12/12 19:25	09/19/12 13:47	7440-22-4	
Sodium, Dissolved	9440	ug/L	50.0	1	09/12/12 19:25	09/19/12 13:47	7440-23-5	
Thallium, Dissolved	ND	ug/L	0.10	1	09/12/12 19:25	09/19/12 13:47	7440-28-0	
Vanadium, Dissolved	ND	ug/L	0.10	1	09/12/12 19:25	09/19/12 13:47	7440-62-2	
Zinc, Dissolved	15900	ug/L	500	100	09/12/12 19:25	09/19/12 11:51	7440-66-6	M6
245.1 Mercury		Analytical Method: EPA 245.1						
Mercury	ND	ug/L	0.20	1	09/13/12 09:20	09/13/12 12:54	7439-97-6	
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1						
Mercury, Dissolved	ND	ug/L	0.20	1	09/13/12 09:16	09/13/12 13:51	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B						
Alkalinity, Bicarbonate (CaCO ₃)	23.7	mg/L	20.0	1		09/13/12 10:38		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1		09/13/12 10:38		
Alkalinity, Total as CaCO ₃	23.7	mg/L	20.0	1		09/13/12 10:38		
2540C Total Dissolved Solids		Analytical Method: SM 2540C						
Total Dissolved Solids	1460	mg/L	5.0	1		09/10/12 15:14		
2540D Total Suspended Solids		Analytical Method: SM 2540D						
Total Suspended Solids	11.0	mg/L	5.0	1		09/12/12 09:23		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D						
Sulfide, Total	ND	mg/L	0.050	1		09/10/12 15:39	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0						
Bromide	ND	mg/L	1.0	1		09/14/12 19:54	24959-67-9	
Chloride	ND	mg/L	1.0	1		09/14/12 19:54	16887-00-6	
Fluoride	3.1	mg/L	0.20	1		09/14/12 19:54	16984-48-8	
Sulfate	506	mg/L	100	100		09/17/12 10:33	14808-79-8	
353.2 Nitrogen, NO₂/NO₃ unpres		Analytical Method: EPA 353.2						
Nitrogen, Nitrate	ND	mg/L	0.10	1		09/07/12 16:17		
5310C TOC		Analytical Method: SM 5310C						
Total Organic Carbon	1.4	mg/L	1.0	1		09/17/12 22:21	7440-44-0	

ANALYTICAL RESULTS

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

Sample: RICO517 GEO 495 120905 Lab ID: 60128492002 Collected: 09/05/12 17:15 Received: 09/07/12 10:30 Matrix: Water
1715

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS		Analytical Method: EPA 200.8						
Aluminum	2760	ug/L	4.0	1	09/12/12 19:23	09/19/12 13:20	7429-90-5	
Antimony	ND	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:20	7440-36-0	
Arsenic	0.94	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:20	7440-38-2	
Barium	34.8	ug/L	0.30	1	09/12/12 19:23	09/19/12 13:20	7440-39-3	
Beryllium	0.90	ug/L	0.20	1	09/12/12 19:23	09/19/12 13:20	7440-41-7	
Cadmium	83.7	ug/L	0.080	1	09/12/12 19:23	09/19/12 13:20	7440-43-9	
Calcium	326000	ug/L	400	20	09/12/12 19:23	09/19/12 11:24	7440-70-2	
Chromium	3.3	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:20	7440-47-3	
Cobalt	7.2	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:20	7440-48-4	
Copper	354	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:20	7440-50-8	
Iron	5760	ug/L	50.0	1	09/12/12 19:23	09/19/12 13:20	7439-89-6	
Lead	25.1	ug/L	0.10	1	09/12/12 19:23	09/19/12 13:20	7439-92-1	
Lithium	30.2	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:20	7439-93-2	
Magnesium	30900	ug/L	100	20	09/12/12 19:23	09/19/12 11:24	7439-95-4	
Manganese	4860	ug/L	10.0	20	09/12/12 19:23	09/19/12 11:24	7439-96-5	
Molybdenum	5.5	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:20	7439-98-7	
Nickel	18.4	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:20	7440-02-0	
Potassium	1560	ug/L	20.0	1	09/12/12 19:23	09/19/12 13:20	7440-09-7	
Selenium	ND	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:20	7782-49-2	
Silica	17700	ug/L	1070	20	09/12/12 19:23	09/19/12 11:24	7631-86-9	
Silver	ND	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:20	7440-22-4	
Sodium	9260	ug/L	50.0	1	09/12/12 19:23	09/19/12 13:20	7440-23-5	
Thallium	ND	ug/L	0.10	1	09/12/12 19:23	09/19/12 13:20	7440-28-0	
Total Hardness by 2340B	941000	ug/L	1420	20	09/12/12 19:23	09/19/12 11:24		
Vanadium	0.15	ug/L	0.10	1	09/12/12 19:23	09/19/12 13:20	7440-62-2	
Zinc	14800	ug/L	500	100	09/12/12 19:23	09/19/12 11:28	7440-66-6	

200.8 MET ICPMS, Dissolved

Analytical Method: EPA 200.8

Aluminum, Dissolved	1900	ug/L	4.0	1	09/12/12 19:25	09/19/12 12:33	7429-90-5	
Antimony, Dissolved	ND	ug/L	0.50	1	09/12/12 19:25	09/19/12 12:33	7440-36-0	
Arsenic, Dissolved	ND	ug/L	0.50	1	09/12/12 19:25	09/19/12 12:33	7440-38-2	
Barium, Dissolved	21.7	ug/L	0.30	1	09/12/12 19:25	09/19/12 12:33	7440-39-3	
Beryllium, Dissolved	0.72	ug/L	0.20	1	09/12/12 19:25	09/19/12 12:33	7440-41-7	
Cadmium, Dissolved	85.5	ug/L	0.080	1	09/12/12 19:25	09/19/12 12:33	7440-43-9	
Calcium, Dissolved	328000	ug/L	400	20	09/12/12 19:25	09/19/12 12:38	7440-70-2	
Chromium, Dissolved	ND	ug/L	0.50	1	09/12/12 19:25	09/19/12 12:33	7440-47-3	
Cobalt, Dissolved	7.5	ug/L	0.50	1	09/12/12 19:25	09/19/12 12:33	7440-48-4	
Copper, Dissolved	253	ug/L	0.50	1	09/12/12 19:25	09/19/12 12:33	7440-50-8	
Iron, Dissolved	585	ug/L	50.0	1	09/12/12 19:25	09/19/12 12:33	7439-89-6	
Lead, Dissolved	0.97	ug/L	0.10	1	09/12/12 19:25	09/19/12 12:33	7439-92-1	
Lithium, Dissolved	31.5	ug/L	0.50	1	09/12/12 19:25	09/19/12 12:33	7439-93-2	
Magnesium, Dissolved	31100	ug/L	100	20	09/12/12 19:25	09/19/12 12:38	7439-95-4	
Manganese, Dissolved	4890	ug/L	10.0	20	09/12/12 19:25	09/19/12 12:38	7439-96-5	
Molybdenum, Dissolved	2.0	ug/L	0.50	1	09/12/12 19:25	09/19/12 12:33	7439-98-7	
Nickel, Dissolved	21.5	ug/L	0.50	1	09/12/12 19:25	09/19/12 12:33	7440-02-0	
Potassium, Dissolved	1600	ug/L	20.0	1	09/12/12 19:25	09/19/12 12:33	7440-09-7	

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ANALYTICAL RESULTS

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

Sample: RICO517 GEO 495 120905 **Lab ID:** 60128492002 Collected: 09/05/12 17:15 Received: 09/07/12 10:30 Matrix: Water
1715

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved		Analytical Method: EPA 200.8						
Selenium, Dissolved	ND	ug/L	0.50	1	09/12/12 19:25	09/19/12 12:33	7782-49-2	
Silver, Dissolved	ND	ug/L	0.50	1	09/12/12 19:25	09/19/12 12:33	7440-22-4	
Sodium, Dissolved	9550	ug/L	50.0	1	09/12/12 19:25	09/19/12 12:33	7440-23-5	
Thallium, Dissolved	ND	ug/L	0.10	1	09/12/12 19:25	09/19/12 12:33	7440-28-0	
Vanadium, Dissolved	ND	ug/L	0.10	1	09/12/12 19:25	09/19/12 12:33	7440-62-2	
Zinc, Dissolved	15800	ug/L	500	100	09/12/12 19:25	09/19/12 12:42	7440-66-6	
245.1 Mercury		Analytical Method: EPA 245.1						
Mercury	ND	ug/L	0.20	1	09/13/12 09:20	09/13/12 12:57	7439-97-6	
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1						
Mercury, Dissolved	ND	ug/L	0.20	1	09/13/12 09:16	09/13/12 13:53	7439-97-6	
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D						
Sulfide, Total	ND	mg/L	0.050	1		09/10/12 15:40	18496-25-8	

ANALYTICAL RESULTS

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

Sample: RICOSLT DR3 120905 1755 Lab ID: 60128492003 Collected: 09/05/12 17:55 Received: 09/07/12 10:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS		Analytical Method: EPA 200.8						
Aluminum	200	ug/L	4.0	1	09/12/12 19:23	09/19/12 13:25	7429-90-5	
Antimony	ND	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:25	7440-36-0	
Arsenic	ND	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:25	7440-38-2	
Barium	19.8	ug/L	0.30	1	09/12/12 19:23	09/19/12 13:25	7440-39-3	
Beryllium	0.54	ug/L	0.20	1	09/12/12 19:23	09/19/12 13:25	7440-41-7	
Cadmium	20.4	ug/L	0.080	1	09/12/12 19:23	09/19/12 13:25	7440-43-9	
Calcium	251000	ug/L	400	20	09/12/12 19:23	09/19/12 10:55	7440-70-2	
Chromium	ND	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:25	7440-47-3	
Cobalt	3.0	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:25	7440-48-4	
Copper	37.2	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:25	7440-50-8	
Iron	3350	ug/L	50.0	1	09/12/12 19:23	09/19/12 13:25	7439-89-6	
Lead	1.5	ug/L	0.10	1	09/12/12 19:23	09/19/12 13:25	7439-92-1	
Lithium	26.0	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:25	7439-93-2	
Magnesium	20100	ug/L	5.0	1	09/12/12 19:23	09/19/12 13:25	7439-95-4	
Manganese	1970	ug/L	10.0	20	09/12/12 19:23	09/19/12 10:55	7439-96-5	
Molybdenum	14.1	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:25	7439-98-7	
Nickel	4.8	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:25	7440-02-0	
Potassium	1600	ug/L	20.0	1	09/12/12 19:23	09/19/12 13:25	7440-09-7	
Selenium	ND	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:25	7782-49-2	
Silica	16800	ug/L	1070	20	09/12/12 19:23	09/19/12 10:55	7631-86-9	
Silver	ND	ug/L	0.50	1	09/12/12 19:23	09/19/12 13:25	7440-22-4	
Sodium	10900	ug/L	50.0	1	09/12/12 19:23	09/19/12 13:25	7440-23-5	
Thallium	ND	ug/L	0.10	1	09/12/12 19:23	09/19/12 13:25	7440-28-0	
Total Hardness by 2340B	710000	ug/L	1420	20	09/12/12 19:23	09/19/12 10:55		
Vanadium	ND	ug/L	0.10	1	09/12/12 19:23	09/19/12 13:25	7440-62-2	
Zinc	4080	ug/L	100	20	09/12/12 19:23	09/19/12 10:55	7440-66-6	

200.8 MET ICPMS, Dissolved

Analytical Method: EPA 200.8

Aluminum, Dissolved	4.0	ug/L	4.0	1	09/12/12 19:25	09/19/12 12:47	7429-90-5	
Antimony, Dissolved	ND	ug/L	0.50	1	09/12/12 19:25	09/19/12 12:47	7440-36-0	
Arsenic, Dissolved	ND	ug/L	0.50	1	09/12/12 19:25	09/19/12 12:47	7440-38-2	
Barium, Dissolved	19.5	ug/L	0.30	1	09/12/12 19:25	09/19/12 12:47	7440-39-3	
Beryllium, Dissolved	0.27	ug/L	0.20	1	09/12/12 19:25	09/19/12 12:47	7440-41-7	
Cadmium, Dissolved	19.5	ug/L	0.080	1	09/12/12 19:25	09/19/12 12:47	7440-43-9	
Calcium, Dissolved	247000	ug/L	400	20	09/12/12 19:25	09/19/12 12:51	7440-70-2	
Chromium, Dissolved	ND	ug/L	0.50	1	09/12/12 19:25	09/19/12 12:47	7440-47-3	
Cobalt, Dissolved	2.9	ug/L	0.50	1	09/12/12 19:25	09/19/12 12:47	7440-48-4	
Copper, Dissolved	2.5	ug/L	0.50	1	09/12/12 19:25	09/19/12 12:47	7440-50-8	
Iron, Dissolved	349	ug/L	50.0	1	09/12/12 19:25	09/19/12 12:47	7439-89-6	
Lead, Dissolved	ND	ug/L	0.10	1	09/12/12 19:25	09/19/12 12:47	7439-92-1	
Lithium, Dissolved	26.8	ug/L	0.50	1	09/12/12 19:25	09/19/12 12:47	7439-93-2	
Magnesium, Dissolved	20300	ug/L	5.0	1	09/12/12 19:25	09/19/12 12:47	7439-95-4	
Manganese, Dissolved	1970	ug/L	10.0	20	09/12/12 19:25	09/19/12 12:51	7439-96-5	
Molybdenum, Dissolved	13.4	ug/L	0.50	1	09/12/12 19:25	09/19/12 12:47	7439-98-7	
Nickel, Dissolved	5.2	ug/L	0.50	1	09/12/12 19:25	09/19/12 12:47	7440-02-0	
Potassium, Dissolved	1630	ug/L	20.0	1	09/12/12 19:25	09/19/12 12:47	7440-09-7	
Selenium, Dissolved	ND	ug/L	0.50	1	09/12/12 19:25	09/19/12 12:47	7782-49-2	

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ANALYTICAL RESULTS

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

Sample: RICOSLT DR3 120905 1755		Lab ID: 60128492003	Collected: 09/05/12 17:55	Received: 09/07/12 10:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8							
Silver, Dissolved	ND	ug/L	0.50	1	09/12/12 19:25	09/19/12 12:47	7440-22-4	
Sodium, Dissolved	11000	ug/L	50.0	1	09/12/12 19:25	09/19/12 12:47	7440-23-5	
Thallium, Dissolved	ND	ug/L	0.10	1	09/12/12 19:25	09/19/12 12:47	7440-28-0	
Vanadium, Dissolved	ND	ug/L	0.10	1	09/12/12 19:25	09/19/12 12:47	7440-62-2	
Zinc, Dissolved	3890	ug/L	100	20	09/12/12 19:25	09/19/12 12:51	7440-66-6	
245.1 Mercury	Analytical Method: EPA 245.1							
Mercury	ND	ug/L	0.20	1	09/13/12 09:20	09/13/12 12:59	7439-97-6	
245.1 Mercury, Dissolved	Analytical Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	1	09/13/12 09:16	09/13/12 13:56	7439-97-6	
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	97.4	mg/L	20.0	1		09/13/12 10:52		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1		09/13/12 10:52		
Alkalinity, Total as CaCO ₃	97.4	mg/L	20.0	1		09/13/12 10:52		
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	1040	mg/L	5.0	1		09/10/12 15:14		
2540D Total Suspended Solids	Analytical Method: SM 2540D							
Total Suspended Solids	ND	mg/L	5.0	1		09/12/12 09:24		
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		09/10/12 15:40	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		09/14/12 20:10	24959-67-9	
Chloride	ND	mg/L	1.0	1		09/14/12 20:10	16887-00-6	
Fluoride	2.2	mg/L	0.20	1		09/14/12 20:10	16984-48-8	
Sulfate	622	mg/L	100	100		09/17/12 11:21	14808-79-8	
353.2 Nitrogen, NO₂/NO₃ unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	ND	mg/L	0.10	1		09/07/12 16:16		
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	ND	mg/L	1.0	1		09/17/12 22:50	7440-44-0	

ANALYTICAL RESULTS

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

Sample: RICOBLAINE COFFERD **Lab ID:** 60128492004 **Collected:** 09/05/12 17:47 **Received:** 09/07/12 10:30 **Matrix:** Water
120905 1747

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS		Analytical Method: EPA 200.8						
Aluminum	268000	ug/L	400	100	09/12/12 19:23	09/21/12 15:06	7429-90-5	
Antimony	ND	ug/L	2.5	5	09/12/12 19:23	09/21/12 14:57	7440-36-0	D3
Arsenic	341	ug/L	2.5	5	09/12/12 19:23	09/21/12 14:57	7440-38-2	
Barium	ND	ug/L	1.5	5	09/12/12 19:23	09/21/12 14:57	7440-39-3	D3
Beryllium	27.2	ug/L	1.0	5	09/12/12 19:23	09/21/12 14:57	7440-41-7	CH
Cadmium	1090	ug/L	0.40	5	09/12/12 19:23	09/21/12 14:57	7440-43-9	
Calcium	402000	ug/L	2000	100	09/12/12 19:23	09/21/12 15:06	7440-70-2	
Chromium	233	ug/L	2.5	5	09/12/12 19:23	09/21/12 14:57	7440-47-3	
Cobalt	237	ug/L	2.5	5	09/12/12 19:23	09/21/12 14:57	7440-48-4	
Copper	26500	ug/L	50.0	100	09/12/12 19:23	09/21/12 15:06	7440-50-8	
Iron	1870000	ug/L	5000	100	09/12/12 19:23	09/21/12 15:06	7439-89-6	
Lead	202	ug/L	0.50	5	09/12/12 19:23	09/21/12 14:57	7439-92-1	
Lithium	383	ug/L	2.5	5	09/12/12 19:23	09/21/12 14:57	7439-93-2	
Magnesium	245000	ug/L	500	100	09/12/12 19:23	09/21/12 15:06	7439-95-4	
Manganese	113000	ug/L	500	1000	09/12/12 19:23	09/21/12 15:11	7439-96-5	
Molybdenum	9.5	ug/L	2.5	5	09/12/12 19:23	09/21/12 14:57	7439-98-7	
Nickel	398	ug/L	2.5	5	09/12/12 19:23	09/21/12 14:57	7440-02-0	
Potassium	10500	ug/L	100	5	09/12/12 19:23	09/21/12 14:57	7440-09-7	
Selenium	57.7	ug/L	2.5	5	09/12/12 19:23	09/21/12 14:57	7782-49-2	
Silica	109000	ug/L	5350	100	09/12/12 19:23	09/21/12 15:06	7631-86-9	
Silver	ND	ug/L	2.5	5	09/12/12 19:23	09/21/12 14:57	7440-22-4	D3
Sodium	6580	ug/L	250	5	09/12/12 19:23	09/21/12 14:57	7440-23-5	
Thallium	2.5	ug/L	0.50	5	09/12/12 19:23	09/21/12 14:57	7440-28-0	
Total Hardness by 2340B	2010000	ug/L	7100	100	09/12/12 19:23	09/21/12 15:06		
Vanadium	334	ug/L	0.50	5	09/12/12 19:23	09/21/12 14:57	7440-62-2	
Zinc	228000	ug/L	5000	1000	09/12/12 19:23	09/21/12 15:11	7440-66-6	

200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8

Aluminum, Dissolved	279000	ug/L	400	100	09/12/12 19:25	09/19/12 14:36	7429-90-5	
Antimony, Dissolved	ND	ug/L	50.0	100	09/12/12 19:25	09/19/12 14:36	7440-36-0	D3
Arsenic, Dissolved	364	ug/L	2.5	5	09/12/12 19:25	09/19/12 12:15	7440-38-2	
Barium, Dissolved	ND	ug/L	30.0	100	09/12/12 19:25	09/19/12 14:36	7440-39-3	D3
Beryllium, Dissolved	27.1	ug/L	1.0	5	09/12/12 19:25	09/19/12 12:15	7440-41-7	
Cadmium, Dissolved	1540	ug/L	8.0	100	09/12/12 19:25	09/19/12 14:36	7440-43-9	
Calcium, Dissolved	423000	ug/L	2000	100	09/12/12 19:25	09/19/12 14:36	7440-70-2	
Chromium, Dissolved	238	ug/L	2.5	5	09/12/12 19:25	09/19/12 12:15	7440-47-3	
Cobalt, Dissolved	259	ug/L	2.5	5	09/12/12 19:25	09/19/12 12:15	7440-48-4	
Copper, Dissolved	26600	ug/L	50.0	100	09/12/12 19:25	09/19/12 14:36	7440-50-8	
Iron, Dissolved	1890000	ug/L	5000	100	09/12/12 19:25	09/19/12 14:36	7439-89-6	
Lead, Dissolved	244	ug/L	10.0	100	09/12/12 19:25	09/19/12 14:36	7439-92-1	
Lithium, Dissolved	350	ug/L	2.5	5	09/12/12 19:25	09/19/12 12:15	7439-93-2	
Magnesium, Dissolved	246000	ug/L	500	100	09/12/12 19:25	09/19/12 14:36	7439-95-4	
Manganese, Dissolved	107000	ug/L	500	1000	09/12/12 19:25	09/19/12 14:40	7439-96-5	
Molybdenum, Dissolved	ND	ug/L	50.0	100	09/12/12 19:25	09/19/12 14:36	7439-98-7	D3
Nickel, Dissolved	440	ug/L	2.5	5	09/12/12 19:25	09/19/12 12:15	7440-02-0	
Potassium, Dissolved	11300	ug/L	100	5	09/12/12 19:25	09/19/12 12:15	7440-09-7	

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ANALYTICAL RESULTS

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

Sample: RICOBLAINE COFFERD 120905 1747		Lab ID: 60128492004	Collected: 09/05/12 17:47	Received: 09/07/12 10:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved		Analytical Method: EPA 200.8						
Selenium, Dissolved	39.9	ug/L	2.5	5	09/12/12 19:25	09/19/12 12:15	7782-49-2	
Silver, Dissolved	ND	ug/L	50.0	100	09/12/12 19:25	09/19/12 14:36	7440-22-4	D3
Sodium, Dissolved	6940	ug/L	250	5	09/12/12 19:25	09/19/12 12:15	7440-23-5	
Thallium, Dissolved	ND	ug/L	10.0	100	09/12/12 19:25	09/19/12 14:36	7440-28-0	D3
Vanadium, Dissolved	342	ug/L	0.50	5	09/12/12 19:25	09/19/12 12:15	7440-62-2	
Zinc, Dissolved	226000	ug/L	5000	1000	09/12/12 19:25	09/19/12 14:40	7440-66-6	
245.1 Mercury		Analytical Method: EPA 245.1						
Mercury	ND	ug/L	0.20	1	09/13/12 09:20	09/13/12 13:01	7439-97-6	
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1						
Mercury, Dissolved	ND	ug/L	0.20	1	09/13/12 09:16	09/13/12 13:58	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B						
Alkalinity, Bicarbonate (CaCO ₃)	ND	mg/L	20.0	1		09/13/12 10:53		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1		09/13/12 10:53		
Alkalinity, Total as CaCO ₃	ND	mg/L	20.0	1		09/13/12 10:53		
2540C Total Dissolved Solids		Analytical Method: SM 2540C						
Total Dissolved Solids	2740	mg/L	5.0	1		09/10/12 15:14		
2540D Total Suspended Solids		Analytical Method: SM 2540D						
Total Suspended Solids	7.0	mg/L	5.0	1		09/12/12 09:24		
4500S2D Sulfide, Total		Analytical Method: SM 4500-S-2 D						
Sulfide, Total	ND	mg/L	0.050	1		09/10/12 15:40	18496-25-8	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0						
Bromide	ND	mg/L	1.0	1		09/14/12 20:25	24959-67-9	
Chloride	3.2	mg/L	1.0	1		09/14/12 20:25	16887-00-6	
Fluoride	77.1	mg/L	2.0	10		09/17/12 11:37	16984-48-8	
Sulfate	59500	mg/L	5000	5000		09/17/12 14:07	14808-79-8	
353.2 Nitrogen, NO₂/NO₃ unpres		Analytical Method: EPA 353.2						
Nitrogen, Nitrate	ND	mg/L	0.50	5		09/07/12 16:14		D3,M1
5310C TOC		Analytical Method: SM 5310C						
Total Organic Carbon	4.6	mg/L	1.0	1		09/17/12 23:04	7440-44-0	

QUALITY CONTROL DATA

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

QC Batch: ICPM/35135 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60128492001, 60128492002, 60128492003, 60128492004

METHOD BLANK: 1286396 Matrix: Water

Associated Lab Samples: 60128492001, 60128492002, 60128492003, 60128492004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	4.0	09/19/12 10:14	
Antimony	ug/L	ND	0.50	09/19/12 10:14	
Arsenic	ug/L	ND	0.50	09/19/12 10:14	
Barium	ug/L	ND	0.30	09/19/12 10:14	
Beryllium	ug/L	ND	0.20	09/19/12 10:14	
Cadmium	ug/L	ND	0.080	09/19/12 10:14	
Calcium	ug/L	ND	20.0	09/19/12 10:14	
Chromium	ug/L	ND	0.50	09/19/12 10:14	
Cobalt	ug/L	ND	0.50	09/19/12 10:14	
Copper	ug/L	ND	0.50	09/19/12 10:14	
Iron	ug/L	ND	50.0	09/19/12 10:14	
Lead	ug/L	ND	0.10	09/19/12 10:14	
Lithium	ug/L	ND	0.50	09/19/12 10:14	
Magnesium	ug/L	ND	5.0	09/19/12 10:14	
Manganese	ug/L	ND	0.50	09/19/12 10:14	
Molybdenum	ug/L	ND	0.50	09/19/12 10:14	
Nickel	ug/L	ND	0.50	09/19/12 10:14	
Potassium	ug/L	ND	20.0	09/19/12 10:14	
Selenium	ug/L	ND	0.50	09/19/12 10:14	
Silver	ug/L	ND	0.50	09/19/12 10:14	
Sodium	ug/L	ND	50.0	09/19/12 10:14	
Thallium	ug/L	ND	0.10	09/19/12 10:14	
Vanadium	ug/L	ND	0.10	09/19/12 10:14	
Zinc	ug/L	ND	5.0	09/19/12 10:14	

LABORATORY CONTROL SAMPLE: 1286397

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	80	83.1	104	85-115	
Antimony	ug/L	80	78.8	98	85-115	
Arsenic	ug/L	80	79.2	99	85-115	
Barium	ug/L	80	78.5	98	85-115	
Beryllium	ug/L	80	85.5	107	85-115	
Cadmium	ug/L	80	79.0	99	85-115	
Calcium	ug/L	1000	1000	100	85-115	
Chromium	ug/L	80	79.0	99	85-115	
Cobalt	ug/L	80	79.8	100	85-115	
Copper	ug/L	80	78.9	99	85-115	
Iron	ug/L	1000	1000	100	85-115	
Lead	ug/L	80	81.7	102	85-115	
Lithium	ug/L	80	85.5	107	85-115	

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QUALITY CONTROL DATA

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

LABORATORY CONTROL SAMPLE: 1286397

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Magnesium	ug/L	1000	1030	103	85-115	
Manganese	ug/L	80	78.3	98	85-115	
Molybdenum	ug/L	80	78.4	98	85-115	
Nickel	ug/L	80	81.8	102	85-115	
Potassium	ug/L	1000	997	100	85-115	
Selenium	ug/L	80	78.7	98	85-115	
Silver	ug/L	80	79.4	99	85-115	
Sodium	ug/L	1000	1010	101	85-115	
Thallium	ug/L	80	81.5	102	85-115	
Vanadium	ug/L	80	79.0	99	85-115	
Zinc	ug/L	80	81.6	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1286398 1286399

Parameter	Units	60128492001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	2780	80	80	3020	3040	305	324	70-130	.5	20	M6
Antimony	ug/L	ND	80	80	80.6	79.5	100	99	70-130	1	20	
Arsenic	ug/L	0.95	80	80	82.4	83.1	102	103	70-130	.8	20	
Barium	ug/L	22.2	80	80	102	101	100	98	70-130	2	20	
Beryllium	ug/L	0.84	80	80	85.3	93.8	106	116	70-130	9	20	
Cadmium	ug/L	83.6	80	80	168	169	105	107	70-130	1	20	
Calcium	ug/L	327000	1000	1000	328000	327000	170	-20	70-130	.6	20	E,M6
Chromium	ug/L	1.3	80	80	82.1	81.9	101	101	70-130	.3	20	
Cobalt	ug/L	7.2	80	80	89.6	86.6	103	99	70-130	3	20	
Copper	ug/L	344	80	80	438	433	117	111	70-130	1	20	
Iron	ug/L	5300	1000	1000	6540	6530	124	122	70-130	.3	20	
Lead	ug/L	24.8	80	80	109	109	105	106	70-130	.3	20	
Lithium	ug/L	30.6	80	80	120	123	112	116	70-130	3	20	
Magnesium	ug/L	30800	1000	1000	32100	32000	125	115	70-130	.3	20	
Manganese	ug/L	4810	80	80	4950	4960	180	182	70-130	.04	20	E,M6
Molybdenum	ug/L	5.2	80	80	86.4	82.6	102	97	70-130	5	20	
Nickel	ug/L	14.4	80	80	99.3	97.2	106	103	70-130	2	20	
Potassium	ug/L	1590	1000	1000	2620	2630	103	104	70-130	.4	20	
Selenium	ug/L	0.52	80	80	82.1	81.8	102	102	70-130	.4	20	
Silver	ug/L	ND	80	80	79.0	78.2	99	98	70-130	1	20	
Sodium	ug/L	9210	1000	1000	10500	10500	131	129	70-130	.2	20	M6
Thallium	ug/L	ND	80	80	82.1	82.9	103	103	70-130	.9	20	
Vanadium	ug/L	0.34	80	80	81.7	80.0	102	100	70-130	2	20	
Zinc	ug/L	15200	80	80	15700	15600	662	562	70-130	.5	20	E,M6

QUALITY CONTROL DATA

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

QC Batch: ICPM/35134 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60128492001, 60128492002, 60128492003, 60128492004

METHOD BLANK: 1286205 Matrix: Water

Associated Lab Samples: 60128492001, 60128492002, 60128492003, 60128492004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	4.0	09/19/12 11:10	
Antimony, Dissolved	ug/L	ND	0.50	09/19/12 11:10	
Arsenic, Dissolved	ug/L	ND	0.50	09/19/12 11:10	
Barium, Dissolved	ug/L	ND	0.30	09/19/12 11:10	
Beryllium, Dissolved	ug/L	ND	0.20	09/19/12 11:10	CH
Cadmium, Dissolved	ug/L	ND	0.080	09/19/12 11:10	
Calcium, Dissolved	ug/L	ND	20.0	09/19/12 11:10	
Chromium, Dissolved	ug/L	ND	0.50	09/19/12 11:10	
Cobalt, Dissolved	ug/L	ND	0.50	09/19/12 11:10	
Copper, Dissolved	ug/L	ND	0.50	09/19/12 11:10	
Iron, Dissolved	ug/L	ND	50.0	09/19/12 11:10	
Lead, Dissolved	ug/L	ND	0.10	09/19/12 11:10	
Lithium, Dissolved	ug/L	ND	0.50	09/19/12 11:10	CH
Magnesium, Dissolved	ug/L	ND	5.0	09/19/12 11:10	
Manganese, Dissolved	ug/L	ND	0.50	09/19/12 11:10	
Molybdenum, Dissolved	ug/L	ND	0.50	09/19/12 11:10	
Nickel, Dissolved	ug/L	ND	0.50	09/19/12 11:10	
Potassium, Dissolved	ug/L	ND	20.0	09/19/12 11:10	
Selenium, Dissolved	ug/L	ND	0.50	09/19/12 11:10	
Silver, Dissolved	ug/L	ND	0.50	09/19/12 11:10	
Sodium, Dissolved	ug/L	ND	50.0	09/19/12 11:10	
Thallium, Dissolved	ug/L	ND	0.10	09/19/12 11:10	
Vanadium, Dissolved	ug/L	ND	0.10	09/19/12 11:10	
Zinc, Dissolved	ug/L	ND	5.0	09/19/12 11:10	

LABORATORY CONTROL SAMPLE: 1286206

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	80	87.5	109	85-115	
Antimony, Dissolved	ug/L	80	79.3	99	85-115	
Arsenic, Dissolved	ug/L	80	80.2	100	85-115	
Barium, Dissolved	ug/L	80	79.3	99	85-115	
Beryllium, Dissolved	ug/L	80	89.0	111	85-115	
Cadmium, Dissolved	ug/L	80	80.4	100	85-115	
Calcium, Dissolved	ug/L	1000	940	94	85-115	
Chromium, Dissolved	ug/L	80	79.0	99	85-115	
Cobalt, Dissolved	ug/L	80	80.1	100	85-115	
Copper, Dissolved	ug/L	80	79.5	99	85-115	
Iron, Dissolved	ug/L	1000	1010	101	85-115	
Lead, Dissolved	ug/L	80	83.0	104	85-115	
Lithium, Dissolved	ug/L	80	88.9	111	85-115	

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QUALITY CONTROL DATA

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

LABORATORY CONTROL SAMPLE: 1286206

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Magnesium, Dissolved	ug/L	1000	1040	104	85-115	
Manganese, Dissolved	ug/L	80	79.9	100	85-115	
Molybdenum, Dissolved	ug/L	80	78.0	98	85-115	
Nickel, Dissolved	ug/L	80	81.8	102	85-115	
Potassium, Dissolved	ug/L	1000	989	99	85-115	
Selenium, Dissolved	ug/L	80	80.8	101	85-115	
Silver, Dissolved	ug/L	80	79.7	100	85-115	
Sodium, Dissolved	ug/L	1000	1010	101	85-115	
Thallium, Dissolved	ug/L	80	82.8	104	85-115	
Vanadium, Dissolved	ug/L	80	78.2	98	85-115	
Zinc, Dissolved	ug/L	80	83.7	105	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1286207 1286208

Parameter	Units	60128492001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	1960	80	80	2130	2040	210	95	70-130	4	20	M6
Antimony, Dissolved	ug/L	ND	80	80	79.8	77.6	100	97	70-130	3	20	
Arsenic, Dissolved	ug/L	ND	80	80	80.4	79.4	100	99	70-130	1	20	
Barium, Dissolved	ug/L	20.4	80	80	101	96.6	100	95	70-130	4	20	
Beryllium, Dissolved	ug/L	0.67	80	80	90.8	84.2	113	104	70-130	8	20	
Cadmium, Dissolved	ug/L	84.3	80	80	168	162	105	98	70-130	3	20	
Calcium, Dissolved	ug/L	336000	1000	1000	325000	317000	-1120	-1920	70-130	2	20	E,M6
Chromium, Dissolved	ug/L	ND	80	80	80.9	78.5	101	98	70-130	3	20	
Cobalt, Dissolved	ug/L	7.1	80	80	87.8	85.3	101	98	70-130	3	20	
Copper, Dissolved	ug/L	248	80	80	330	325	103	96	70-130	2	20	
Iron, Dissolved	ug/L	648	1000	1000	1680	1640	103	99	70-130	2	20	
Lead, Dissolved	ug/L	1.6	80	80	84.3	81.6	103	100	70-130	3	20	
Lithium, Dissolved	ug/L	31.2	80	80	115	118	105	109	70-130	2	20	
Magnesium, Dissolved	ug/L	32200	1000	1000	32000	31300	-26	-94	70-130	2	20	M6
Manganese, Dissolved	ug/L	5010	80	80	4960	4840	-68	-215	70-130	2	20	E,M6
Molybdenum, Dissolved	ug/L	2.1	80	80	81.5	79.1	99	96	70-130	3	20	
Nickel, Dissolved	ug/L	15.6	80	80	97.5	95.1	102	99	70-130	2	20	
Potassium, Dissolved	ug/L	1600	1000	1000	2630	2570	103	97	70-130	2	20	
Selenium, Dissolved	ug/L	0.51	80	80	82.2	76.8	102	95	70-130	7	20	
Silver, Dissolved	ug/L	ND	80	80	78.3	74.7	98	93	70-130	5	20	
Sodium, Dissolved	ug/L	9440	1000	1000	10600	10300	113	83	70-130	3	20	
Thallium, Dissolved	ug/L	ND	80	80	83.0	80.1	104	100	70-130	4	20	
Vanadium, Dissolved	ug/L	ND	80	80	79.9	79.6	100	99	70-130	.4	20	
Zinc, Dissolved	ug/L	15900	80	80	15500	15300	-550	-800	70-130	1	20	E,M6

QUALITY CONTROL DATA

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

QC Batch: MERC/7493 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60128492001, 60128492002, 60128492003, 60128492004

METHOD BLANK: 1286012 Matrix: Water
Associated Lab Samples: 60128492001, 60128492002, 60128492003, 60128492004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	09/13/12 12:10	

LABORATORY CONTROL SAMPLE: 1286013

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.4	107	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1286014 1286015

Parameter	Units	10205033001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	5.4	5.4	107	107	85-115	.6	30	

MATRIX SPIKE SAMPLE: 1286016

Parameter	Units	60128492004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	ND	5	4.4	87	85-115	

QUALITY CONTROL DATA

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

QC Batch:	MERC/7494	Analysis Method:	EPA 245.1
QC Batch Method:	EPA 245.1	Analysis Description:	245.1 Mercury - Dissolved
Associated Lab Samples:	60128492001, 60128492002, 60128492003, 60128492004		

METHOD BLANK:	1286023	Matrix:	Water
Associated Lab Samples:	60128492001, 60128492002, 60128492003, 60128492004		

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	09/13/12 13:11	

LABORATORY CONTROL SAMPLE: 1286024						
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	4.6	93	85-115	

MATRIX SPIKE SAMPLE: 1286027							
Parameter	Units	60128492004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	ND	5	5.3	105	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1286616												1286617	
Parameter	Units	10204929003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
Mercury, Dissolved	ug/L	ND	5	5	5.7	5.6	113	113	85-115	.5	20		

QUALITY CONTROL DATA

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

QC Batch: WET/37069 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60128492001, 60128492003, 60128492004

METHOD BLANK: 1059261 Matrix: Water

Associated Lab Samples: 60128492001, 60128492003, 60128492004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	09/14/12 09:50	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	09/14/12 09:50	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	09/14/12 09:50	

LABORATORY CONTROL SAMPLE: 1059262

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	483	97	90-110	

SAMPLE DUPLICATE: 1059263

Parameter	Units	60128369004 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	14.0J	13.6J		24	
Alkalinity, Total as CaCO ₃	mg/L	81.2	79.6	2	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	67.3	65.9	2	9	

SAMPLE DUPLICATE: 1059264

Parameter	Units	60128492004 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Total as CaCO ₃	mg/L	ND	ND		9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	ND		9	

QUALITY CONTROL DATA

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

QC Batch:	WET/37018	Analysis Method:	SM 2540C
QC Batch Method:	SM 2540C	Analysis Description:	2540C Total Dissolved Solids
Associated Lab Samples:	60128492001, 60128492003, 60128492004		

METHOD BLANK: 1057808 Matrix: Water

Associated Lab Samples: 60128492001, 60128492003, 60128492004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	09/10/12 15:13	

SAMPLE DUPLICATE: 1057809

Parameter	Units	60128492003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1040	1030	1	17	

SAMPLE DUPLICATE: 1057810

Parameter	Units	60128595001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	395	401	2	17	

QUALITY CONTROL DATA

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

QC Batch:	WET/37047	Analysis Method:	SM 2540D
QC Batch Method:	SM 2540D	Analysis Description:	2540D Total Suspended Solids
Associated Lab Samples:	60128492001, 60128492003, 60128492004		

METHOD BLANK: 1058568 Matrix: Water

Associated Lab Samples: 60128492001, 60128492003, 60128492004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	5.0	09/12/12 09:17	

SAMPLE DUPLICATE: 1058569

Parameter	Units	60128420004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	ND		25	

SAMPLE DUPLICATE: 1058570

Parameter	Units	60128460001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	ND		25	

QUALITY CONTROL DATA

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

QC Batch: WET/37004 Analysis Method: SM 4500-S-2 D
QC Batch Method: SM 4500-S-2 D Analysis Description: 4500S2D Sulfide, Total
Associated Lab Samples: 60128492001, 60128492002, 60128492003, 60128492004

METHOD BLANK: 1057425 Matrix: Water
Associated Lab Samples: 60128492001, 60128492002, 60128492003, 60128492004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfide, Total	mg/L	ND	0.050	09/10/12 15:37	

LABORATORY CONTROL SAMPLE: 1057426

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	.5	0.55	109	80-120	

MATRIX SPIKE SAMPLE: 1057427

Parameter	Units	60128369004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	ND	.5	0.55	110	75-125	

SAMPLE DUPLICATE: 1057428

Parameter	Units	60128443001 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfide, Total	mg/L	ND	.031J		20	

QUALITY CONTROL DATA

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

QC Batch: WETA/21641 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60128492001, 60128492003, 60128492004

METHOD BLANK: 1060341 Matrix: Water

Associated Lab Samples: 60128492001, 60128492003, 60128492004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	09/14/12 13:38	
Chloride	mg/L	ND	1.0	09/14/12 13:38	
Fluoride	mg/L	ND	0.20	09/14/12 13:38	

METHOD BLANK: 1061619 Matrix: Water

Associated Lab Samples: 60128492001, 60128492003, 60128492004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.20	09/17/12 09:14	
Sulfate	mg/L	ND	1.0	09/17/12 09:14	

LABORATORY CONTROL SAMPLE: 1060342

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.5	110	90-110	
Chloride	mg/L	5	5.4	107	90-110	
Fluoride	mg/L	2.5	2.5	101	90-110	

LABORATORY CONTROL SAMPLE: 1061620

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.3	93	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1060343 1060344

Parameter	Units	60128078008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	1.4J	10	10	11.7	11.7	103	103	75-119	0	10	
Chloride	mg/L	3.5	10	10	13.4	13.5	99	100	64-118	0	12	
Fluoride	mg/L	0.27J	5	5	5.0	5.1	95	97	75-110	2	10	
Sulfate	mg/L	25.1	10	10	36.4	36.4	113	113	61-119	0	10	

QUALITY CONTROL DATA

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

MATRIX SPIKE SAMPLE:		1060345					
Parameter	Units	60128352003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	500	508	102	75-119	
Chloride	mg/L	245	500	709	93	64-118	
Fluoride	mg/L	ND	250	219	88	75-110	
Sulfate	mg/L	935	500	1280	68	61-119	

QUALITY CONTROL DATA

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

QC Batch: WETA/21562 Analysis Method: EPA 353.2
QC Batch Method: EPA 353.2 Analysis Description: 353.2 Nitrate + Nitrite, Unpres.
Associated Lab Samples: 60128492001, 60128492003, 60128492004

METHOD BLANK: 1056670 Matrix: Water

Associated Lab Samples: 60128492001, 60128492003, 60128492004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Nitrate	mg/L	ND	0.10	09/07/12 16:13	

LABORATORY CONTROL SAMPLE: 1056671

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	1.6	1.6	101	90-110	

MATRIX SPIKE SAMPLE: 1056672

Parameter	Units	60128492004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	ND	1.6	1.1	70	90-110	D3,M1

SAMPLE DUPLICATE: 1056673

Parameter	Units	60128492001 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Nitrate	mg/L	ND	ND		15	

QUALITY CONTROL DATA

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

QC Batch: WETA/21660 Analysis Method: SM 5310C
QC Batch Method: SM 5310C Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 60128492001, 60128492003, 60128492004

METHOD BLANK: 1062060 Matrix: Water

Associated Lab Samples: 60128492001, 60128492003, 60128492004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	09/17/12 18:49	

LABORATORY CONTROL SAMPLE: 1062061

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	4.9	99	80-120	

MATRIX SPIKE SAMPLE: 1062062

Parameter	Units	60128369004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	0.85J	5	6.4	110	80-120	

SAMPLE DUPLICATE: 1062063

Parameter	Units	60128628001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	8.1	8.3	2	25	

QUALIFIERS

Project: RICO 517 SHAFT GEOPHYSICAL CHR
Pace Project No.: 60128492

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

PASI-M Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

CH The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

E Analyte concentration exceeded the calibration range. The reported result is estimated.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60128492001	RICO517 GEO 455 120905 1815	EPA 200.8	ICPM/35135	EPA 200.8	ICPM/13779
60128492002	RICO517 GEO 495 120905 1715	EPA 200.8	ICPM/35135	EPA 200.8	ICPM/13779
60128492003	RICOSLT DR3 120905 1755	EPA 200.8	ICPM/35135	EPA 200.8	ICPM/13779
60128492004	RICOBLAINE COFFERD 120905 1747	EPA 200.8	ICPM/35135	EPA 200.8	ICPM/13779
60128492001	RICO517 GEO 455 120905 1815	EPA 200.8	ICPM/35134	EPA 200.8	ICPM/13780
60128492002	RICO517 GEO 495 120905 1715	EPA 200.8	ICPM/35134	EPA 200.8	ICPM/13780
60128492003	RICOSLT DR3 120905 1755	EPA 200.8	ICPM/35134	EPA 200.8	ICPM/13780
60128492004	RICOBLAINE COFFERD 120905 1747	EPA 200.8	ICPM/35134	EPA 200.8	ICPM/13780
60128492001	RICO517 GEO 455 120905 1815	EPA 245.1	MERC/7493	EPA 245.1	MERC/8350
60128492002	RICO517 GEO 495 120905 1715	EPA 245.1	MERC/7493	EPA 245.1	MERC/8350
60128492003	RICOSLT DR3 120905 1755	EPA 245.1	MERC/7493	EPA 245.1	MERC/8350
60128492004	RICOBLAINE COFFERD 120905 1747	EPA 245.1	MERC/7493	EPA 245.1	MERC/8350
60128492001	RICO517 GEO 455 120905 1815	EPA 245.1	MERC/7494	EPA 245.1	MERC/8351
60128492002	RICO517 GEO 495 120905 1715	EPA 245.1	MERC/7494	EPA 245.1	MERC/8351
60128492003	RICOSLT DR3 120905 1755	EPA 245.1	MERC/7494	EPA 245.1	MERC/8351
60128492004	RICOBLAINE COFFERD 120905 1747	EPA 245.1	MERC/7494	EPA 245.1	MERC/8351
60128492001	RICO517 GEO 455 120905 1815	SM 2320B	WET/37069		
60128492003	RICOSLT DR3 120905 1755	SM 2320B	WET/37069		
60128492004	RICOBLAINE COFFERD 120905 1747	SM 2320B	WET/37069		
60128492001	RICO517 GEO 455 120905 1815	SM 2540C	WET/37018		
60128492003	RICOSLT DR3 120905 1755	SM 2540C	WET/37018		
60128492004	RICOBLAINE COFFERD 120905 1747	SM 2540C	WET/37018		
60128492001	RICO517 GEO 455 120905 1815	SM 2540D	WET/37047		
60128492003	RICOSLT DR3 120905 1755	SM 2540D	WET/37047		
60128492004	RICOBLAINE COFFERD 120905 1747	SM 2540D	WET/37047		
60128492001	RICO517 GEO 455 120905 1815	SM 4500-S-2 D	WET/37004		
60128492002	RICO517 GEO 495 120905 1715	SM 4500-S-2 D	WET/37004		
60128492003	RICOSLT DR3 120905 1755	SM 4500-S-2 D	WET/37004		
60128492004	RICOBLAINE COFFERD 120905 1747	SM 4500-S-2 D	WET/37004		
60128492001	RICO517 GEO 455 120905 1815	EPA 300.0	WETA/21641		
60128492003	RICOSLT DR3 120905 1755	EPA 300.0	WETA/21641		
60128492004	RICOBLAINE COFFERD 120905 1747	EPA 300.0	WETA/21641		
60128492001	RICO517 GEO 455 120905 1815	EPA 353.2	WETA/21562		
60128492003	RICOSLT DR3 120905 1755	EPA 353.2	WETA/21562		
60128492004	RICOBLAINE COFFERD 120905 1747	EPA 353.2	WETA/21562		
60128492001	RICO517 GEO 455 120905 1815	SM 5310C	WETA/21660		
60128492003	RICOSLT DR3 120905 1755	SM 5310C	WETA/21660		

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO 517 SHAFT GEOPHYSICAL CHR

Pace Project No.: 60128492

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60128492004	RICOBLAINE COFFERD 120905 1747	SM 5310C	WETA/21660		



Sample Condition Upon Receipt – ESI Tech Specs

Client Name:

AMEC
BP Anderson
9/7/12

Project #:

60128492

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Optional

Proj Due Date:

9/9

Proj Name:

Tracking #: 1Z733WBZ844923226

Pace Shipping Label Used? Yes ☐ No ☒Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐Packing Material: Bubble Wrap ☒Bubble Bags ☒Foam ☐None ☐Other ☐

Thermometer Used: T-191 / T-194

Type of Ice: ☒ Blue ☐ None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature:

1.7

Date and initials of person examining contents: JWB 9/7/12 1105

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6. N/A
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Includes date/time/ID/analyses Matrix:	water	13.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed JWB
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):	NA	15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State: CA

Client Notification/ Resolution:

Copy COC to Client? Y ☒ N ☐Field Data Required? Y ☐ N ☐

Person Contacted: Lynda Lombardi

Date/Time: 9/11/12

Comments/ Resolution:

Send metals to MN AMW 9/11/12

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: 1052 Start:

End: 1105 End:

Temp: Temp:

Project Manager Review:

AMW

Date:

9/7/12

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the NCDENR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

~~SECRET~~

TN 91212

10203064



Workorder Name: RICO 517 SHAFT GEOPHYSICAL CHR **Owner Received Date:** 9/7/2012 **Results Requested By:** 9/10/2012

[illegible]

**DISCRETE SAMPLING ANALYTICAL PROCEDURES SUMMARY
517 SHAFT CHARACTERIZATION FIELD IMPLEMENTATION PLAN**

Rico-Argentine Mine Site – Rico Tunnels
Dolores County, Colorado

PARAMETER	DETECTION LIMIT (MDL)	METHOD ^{1,2}
NON-METALS		
Alkalinity (mg/L as CaCO ₃)	RL – 20 mg/L	SM 2320B
Bromide (mg/L)	RL – 1.0 mg/L	EPA 300.0
Chloride (mg/L)	RL – 1.0 mg/L	EPA 300.0
Fluoride (mg/L)	RL – 1.0 mg/L	EPA 300.0
Hardness (mg/L as CaCO ₃)	RL – 0.5 mg/L	SM 2340B - in 200.7
Nitrate (mg/L)	RL – 0.25 mg/L	EPA 300.0
Silica	0.1 mg/L	EPA 200.8
Sulfate (mg/L as SO ₄)	RL – 1 mg/L	EPA 300.0
Sulfides (mg/L)	0.05 mg/L	4500-S-2 D
Total Dissolved Solids (mg/L as TDS)	RL – 5.0 mg/L	SM 2540C
Total Organic Carbon (mg/L)	0.5 mg/L	SM 5310C
Total Suspended Solids (mg/L as TSS)	RL – 5.0 mg/L	SM 2540D
TOTAL and DISSOLVED METALS		
✓ Aluminum (µg/L as Al)	2 µg/L	EPA 200.8
✓ Antimony (µg/L as Sb)	0.07 µg/L	EPA 200.8
✓ Arsenic (µg/L as As)	0.09 µg/L	EPA 200.8
✓ Barium (µg/L as Ba)	0.08 µg/L	EPA 200.8
✓ Beryllium (µg/L as Be)	0.02 µg/L	EPA 200.8
✓ Cadmium (µg/L as Cd)	0.03 µg/L	EPA 200.8
✓ Calcium (µg/L as Ca)	10 µg/L	EPA 200.8 - 200.7
✓ Chromium (µg/L as Cr)	0.10 µg/L	EPA 200.8
✓ Cobalt (µg/L as Co)	0.25 µg/L	EPA 200.8
✓ Copper (µg/L as Cu)	0.07 µg/L	EPA 200.8
✓ Iron (µg/L as Fe)	4.67 µg/L	EPA 200.8
✓ Lead (µg/L as Pb)	0.05 µg/L	EPA 200.8
dmN → ✓ Lithium (µg/L as Li)	0.112 µg/L	EPA 200.8
✓ Magnesium (µg/L as Mg)	2.5 µg/L	EPA 200.8 - 200.7
✓ Manganese (µg/L as Mn)	0.17 µg/L	EPA 200.8
Mercury (µg/L as Hg)	0.049 µg/L	EPA 245.1
✓ Molybdenum (µg/L as Mo)	0.12 µg/L	EPA 200.8
✓ Nickel (µg/L as Ni)	0.07 µg/L	EPA 200.8
✓ Potassium (µg/L as K)	10 µg/L	EPA 200.8 - 200.7
✓ Selenium (µg/L as Se)	0.22 µg/L	EPA 200.8
✓ Silver (µg/L as Ag)	0.25 µg/L	EPA 200.8
✓ Sodium (µg/L as Na)	25 µg/L	EPA 200.8 - 200.7

**DISCRETE SAMPLING ANALYTICAL PROCEDURES SUMMARY
517 SHAFT CHARACTERIZATION FIELD IMPLEMENTATION PLAN**

Rico-Argentine Mine Site – Rico Tunnels
Dolores County, Colorado

PARAMETER	DETECTION LIMIT (MDL)	METHOD ^{1,2}
✓ Thallium (µg/L as Tl)	0.05 µg/L	EPA 200.8
✓ Vanadium (µg/L as V)	0.05 µg/L	EPA 200.8
✓ Zinc (µg/L as Zn)	2.5 µg/L	EPA 200.8

Abbreviations:

EPA – United States Environmental Protection Agency

g – gram

mg/L – milligram per liter

mV – milliVolt

µg/L – microgram per liter

µS/cm – micro Siemen per centimeter

N/A – not applicable

ppm – part per million


RL – reporting limit

SM – standard method

SOP – Standard Operating Procedure

s.u. – standard unit

°C – degree Celsius

	Document Name: Sample Container Count	Document Revised: 22Sept2011 Page 1 of 1
	Document No.: F-MN-C-090-Rev.00	Issuing Authority: Pace Minnesota Quality Office

Client: Pace, KS

Project #: _____


COC ID: _____

COC Page _____ of _____

Sample Line Item	DG9H	AG1U	WGFU	JGFU	BP2N	BP2U	BP2S	BP3N	BP3U	BP3S	AG3S	AG1H	VG9M	VG9H	VG9U	Comments
1								2								
2								2								
3								2								
4								2								
5																
6																
7																
8																
9																
10																
11																
12																

Container Codes:

DG9H	40mL HCL amber VOA vial	AF	Air Filter	BP1N	1 liter HNO3 plastic	DG9P	40mL TSP amber vial
AG1U	1 liter unpreserved amber glass	AG1H	1 liter HCL amber glass	BP1S	1 liter H2SO4 plastic	DG9S	40mL H2SO4 amber vial
WGFU	4oz clear soil jar	AG1S	1 liter H2SO4 amber glass	BP1U	1 liter unpreserved plastic	DG9T	40mL Na Thio amber vial
R	terra core kit	AG1T	1 liter Na Thiosulfate amber glass	BP1Z	1 liter NaOH, Zn, Ac	DG9U	40mL unpreserved amber vial
BP2N	500mL HNO3 plastic	AG2N	500mL HNO3 amber glass	BP2A	500mL NaOH, Asc Acid plastic	I	Wipe/Swab
BP2U	500mL unpreserved plastic	AG2S	500mL H2SO4 amber glass	BP2O	500mL NaOH plastic	JGFU	4oz unpreserved amber wide
BP2S	500mL H2SO4 plastic	AG2U	500mL unpreserved amber glass	BP2Z	500mL NaOH, Zn Ac	U	Summa Can
BP3N	250mL HNO3 plastic	AG3U	250mL unpreserved amber glass	BP3A	250mL NaOH, Asc Acid plastic	VG9H	40mL HCL clear vial
BP3U	250mL unpreserved plastic	BG1H	1 liter HCL clear glass	BP3C	250mL NaOH plastic	VG9T	40mL Na Thio. clear vial
BP3S	250mL H2SO4 plastic	BG1S	1 liter H2SO4 clear glass	BP3Z	250mL NaOH, Zn Ac plastic	VG9U	40mL unpreserved clear vial
AG3S	250mL H2SO4 glass amber	BG1T	1 liter Na Thiosulfate clear glass	C	Air Cassettes	VSG	Headspace septa vial & HCL
AG1S	1 liter H2SO4 amber glass	BG1U	1 liter unpreserved glass	DG9B	40mL Na Bisulfate amber vial	WGFX	4oz wide jar w/hexane wipe
BP1U	1 liter unpreserved plastic	BP1A	1 liter NaOH, Asc Acid plastic	DG9M	40mL MeOH clear vial	ZPLC	Ziploc Bag

	Document Name: Sample Condition Upon Receipt Form	Document Revised: 22Aug2012 Page 1 of 1
	Document No.: F-MN-L-213-rev.04	Issuing Authority: Pace Minnesota Quality Office

Sample Condition
Upon Receipt

Client Name:

Project #:

Pace KS

WO#: 10205064



Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client
☐ Commercial ☐ Pace ☐ Other:

Tracking Number: 5356 4231 9155

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No

Seals Intact? ☒ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other:

Temp Blank? ☐ Yes ☒ No

Thermometer Used: ☒ 888A912167504 ☐ 80512447 Type of Ice: ☐ Wet ☐ Blue ☒ None ☐ Samples on ice, cooling process has begun

Cooler Temperature: 16.6 Biological Tissue Frozen? ☐ Yes ☐ No Date and Initials of Person Examining Contents: 9/2/12 TN
Temp should be above freezing to 6°C

Comments:

Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and/or Signature on COC?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>		
All containers needing acid/base preservation have been checked? Noncompliances are noted in 13.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>12)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Exceptions: VOA, Coliform, TOC, Oil and Grease, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Headspace in VOA Vials (>6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Field Data Required? ☐ Yes ☐ No

CLIENT NOTIFICATION/RESOLUTION

Person Contacted:

Date/Time:

Comments/Resolution: Temp ok metals only.

Project Manager Review:

Date:

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

October 30, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO-ARGENTINE MINE SITE
Pace Project No.: 60129992

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on September 28, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: Pace
Florida/NELAP Certification #: E87605
Georgia Certification #: 959
Hawaii Certification #Pace
Idaho Certification #: MN00064
Illinois Certification #: 200011
Kansas Certification #: E-10167
Louisiana Certification #: 03086
Louisiana Certification #: LA080009
Maine Certification #: 2007029
Maryland Certification #: 322
Michigan DEQ Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace

Montana Certification #: MT CERT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Dakota Certification #: R-036
North Dakota Certification #: R-036A
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Tennessee Certification #: 02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia/DCLS Certification #: 002521
Virginia/VELAP Certification #: 460163
Washington Certification #: C754
West Virginia Certification #: 382
Wisconsin Certification #: 999407970

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
A2LA Certification #: 2456.01
Arkansas Certification #: 12-019-0
Illinois Certification #: 002885
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-12-3
Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60129992001	DR3A1209261200	Water	09/26/12 12:00	09/28/12 10:30
60129992002	DR3A1209261800	Water	09/26/12 18:00	09/28/12 10:30
60129992005	517 SHAFT 465	Water	09/26/12 12:20	09/28/12 10:30
60129992007	DR3A1209270000	Water	09/27/12 08:00	09/28/12 10:30
60129992009	DR3A1209261200 RE	Water	09/26/12 12:00	09/28/12 10:30
60129992010	DR3A1209261800 RE	Water	09/26/12 18:00	09/28/12 10:30
60129992011	517 SHAFT 465 RE	Water	09/26/12 12:20	09/28/12 10:30
60129992012	DR3A1209270000 RE	Water	09/27/12 08:00	09/28/12 10:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60129992001	DR3A1209261200	EPA 200.7	JGP	5	PASI-K
		EPA 200.7	JGP	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	AS2	1	PASI-M
		EPA 245.1	TDS	1	PASI-K
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60129992002	DR3A1209261800	EPA 200.7	JGP	5	PASI-K
		EPA 200.7	JGP	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	AS2	1	PASI-M
		EPA 245.1	TDS	1	PASI-K
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60129992005	517 SHAFT 465	EPA 200.7	JGP	5	PASI-K
		EPA 200.7	JGP	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	AS2	1	PASI-M
		EPA 245.1	TDS	1	PASI-K
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60129992007	DR3A1209270000	EPA 200.7	JGP	5	PASI-K
		EPA 200.7	JGP	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	AS2	1	PASI-M
		EPA 245.1	TDS	1	PASI-K
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60129992009	DR3A1209261200 RE	EPA 200.7	SMW	1	PASI-K
60129992010	DR3A1209261800 RE	EPA 200.7	SMW	1	PASI-K
60129992011	517 SHAFT 465 RE	EPA 200.7	SMW	1	PASI-K
60129992012	DR3A1209270000 RE	EPA 200.7	SMW	1	PASI-K

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: October 30, 2012

General Information:

4 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19704

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60129992001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1070022)
 - Calcium
- MSD (Lab ID: 1070023)
 - Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: October 30, 2012

General Information:

8 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/19705

B: Analyte was detected in the associated method blank.

- 517 SHAFT 465 (Lab ID: 60129992005)
 - Calcium, Dissolved
- DR3A1209261200 (Lab ID: 60129992001)
 - Calcium, Dissolved
- DR3A1209261800 (Lab ID: 60129992002)
 - Calcium, Dissolved
- DR3A1209270000 (Lab ID: 60129992007)
 - Calcium, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: October 30, 2012

General Information:

4 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19710

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60129936001,60129992002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1070688)
 - Manganese
 - Zinc
- MSD (Lab ID: 1070689)
 - Manganese
 - Zinc

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: October 30, 2012

Analyte Comments:

QC Batch: MPRP/19710

B: Analyte was detected in the associated method blank.

- 517 SHAFT 465 (Lab ID: 60129992005)
 - Manganese
 - Lead
 - Zinc
- DR3A1209261200 (Lab ID: 60129992001)
 - Manganese
 - Lead
 - Zinc
- DR3A1209261800 (Lab ID: 60129992002)
 - Manganese
 - Lead
 - Zinc
- DR3A1209270000 (Lab ID: 60129992007)
 - Manganese
 - Lead
 - Zinc

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: October 30, 2012

General Information:

4 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19708

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60129992001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1070660)
 - Manganese, Dissolved
 - Zinc, Dissolved
- MSD (Lab ID: 1070661)
 - Manganese, Dissolved
 - Zinc, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: October 30, 2012

Analyte Comments:

QC Batch: MPRP/19708

B: Analyte was detected in the associated method blank.

- 517 SHAFT 465 (Lab ID: 60129992005)
 - Copper, Dissolved
 - Manganese, Dissolved
 - Zinc, Dissolved
- DR3A1209261200 (Lab ID: 60129992001)
 - Copper, Dissolved
 - Manganese, Dissolved
 - Zinc, Dissolved
- DR3A1209261800 (Lab ID: 60129992002)
 - Copper, Dissolved
 - Manganese, Dissolved
 - Zinc, Dissolved
- DR3A1209270000 (Lab ID: 60129992007)
 - Copper, Dissolved
 - Manganese, Dissolved
 - Zinc, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: October 30, 2012

General Information:

4 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: October 30, 2012

General Information:

4 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: October 30, 2012

General Information:

4 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

Sample: DR3A1209261200 Lab ID: 60129992001 Collected: 09/26/12 12:00 Received: 09/28/12 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	224000	ug/L	100	35.8	1	09/29/12 13:10	10/01/12 17:53	7440-70-2	M1
Iron	3750	ug/L	50.0	17.2	1	09/29/12 13:10	10/01/12 17:53	7439-89-6	
Magnesium	18700	ug/L	50.0	17.2	1	09/29/12 13:10	10/01/12 17:53	7439-95-4	
Potassium	1720	ug/L	500	64.1	1	09/29/12 13:10	10/01/12 17:53	7440-09-7	
Sodium	11500	ug/L	500	40.1	1	09/29/12 13:10	10/01/12 17:53	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	225000	ug/L	100	35.8	1	09/29/12 13:10	10/01/12 18:16	7440-70-2	B,D9
Iron, Dissolved	1020	ug/L	50.0	17.2	1	09/29/12 13:10	10/01/12 18:16	7439-89-6	
Magnesium, Dissolved	19000	ug/L	50.0	17.2	1	09/29/12 13:10	10/01/12 18:16	7439-95-4	D9
Potassium, Dissolved	1770	ug/L	500	64.1	1	09/29/12 13:10	10/01/12 18:16	7440-09-7	D9
Sodium, Dissolved	11700	ug/L	500	40.1	1	09/29/12 13:10	10/01/12 18:16	7440-23-5	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.35J	ug/L	1.0	0.14	1	10/01/12 10:45	10/04/12 17:25	7440-38-2	
Cadmium	22.4	ug/L	0.50	0.097	1	10/01/12 10:45	10/04/12 17:25	7440-43-9	
Chromium	0.77J	ug/L	1.0	0.11	1	10/01/12 10:45	10/04/12 17:25	7440-47-3	
Cobalt	3.2	ug/L	1.0	0.048	1	10/01/12 10:45	10/04/12 17:25	7440-48-4	
Copper	47.7	ug/L	1.0	0.45	1	10/01/12 10:45	10/04/12 17:25	7440-50-8	
Lead	2.0	ug/L	1.0	0.051	1	10/01/12 10:45	10/04/12 17:25	7439-92-1	B
Manganese	2160	ug/L	1.0	0.23	1	10/01/12 10:45	10/04/12 17:25	7439-96-5	B
Nickel	4.5	ug/L	1.0	0.35	1	10/01/12 10:45	10/04/12 17:25	7440-02-0	
Selenium	ND	ug/L	1.0	0.35	1	10/01/12 10:45	10/07/12 13:06	7782-49-2	
Zinc	4320	ug/L	10.0	1.6	1	10/01/12 10:45	10/04/12 17:25	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	11.8	ug/L	2.5	0.56	5	10/08/12 11:42	10/12/12 21:02	7439-93-2	
Arsenic, Dissolved	0.18J	ug/L	1.0	0.14	1	10/01/12 10:30	10/02/12 13:31	7440-38-2	
Cadmium, Dissolved	21.7	ug/L	0.50	0.097	1	10/01/12 10:30	10/02/12 13:31	7440-43-9	
Chromium, Dissolved	0.23J	ug/L	1.0	0.11	1	10/01/12 10:30	10/04/12 12:35	7440-47-3	
Cobalt, Dissolved	3.0	ug/L	1.0	0.048	1	10/01/12 10:30	10/04/12 12:35	7440-48-4	
Copper, Dissolved	8.6	ug/L	1.0	0.45	1	10/01/12 10:30	10/04/12 12:35	7440-50-8	B
Lead, Dissolved	ND	ug/L	1.0	0.051	1	10/01/12 10:30	10/02/12 13:31	7439-92-1	
Manganese, Dissolved	2110	ug/L	1.0	0.23	1	10/01/12 10:30	10/02/12 13:31	7439-96-5	B,M1
Nickel, Dissolved	3.7	ug/L	1.0	0.35	1	10/01/12 10:30	10/04/12 12:35	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.35	1	10/01/12 10:30	10/02/12 13:31	7782-49-2	
Zinc, Dissolved	4060	ug/L	10.0	1.6	1	10/01/12 10:30	10/02/12 13:31	7440-66-6	B,M1
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.053	1	09/28/12 16:30	10/01/12 09:54	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	90.2	mg/L	20.0	1.2	1		09/29/12 08:28		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		09/29/12 08:28		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		09/29/12 08:28		

Date: 10/30/2012 10:26 AM

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ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

Sample: DR3A1209261200		Lab ID: 60129992001		Collected: 09/26/12 12:00		Received: 09/28/12 10:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO ₃	90.2	mg/L	20.0	1.2	1		09/29/12 08:28		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.15J	mg/L	1.0	0.078	1		09/28/12 18:43	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		09/28/12 18:43	16887-00-6	
Fluoride	2.3	mg/L	0.20	0.011	1		09/28/12 18:43	16984-48-8	
Sulfate	615	mg/L	100	12.0	100		09/29/12 14:53	14808-79-8	

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

Sample: DR3A1209261800 Lab ID: 60129992002 Collected: 09/26/12 18:00 Received: 09/28/12 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	224000	ug/L	100	35.8	1	09/29/12 13:10	10/01/12 18:01	7440-70-2	
Iron	2930	ug/L	50.0	17.2	1	09/29/12 13:10	10/01/12 18:01	7439-89-6	
Magnesium	18900	ug/L	50.0	17.2	1	09/29/12 13:10	10/01/12 18:01	7439-95-4	
Potassium	1690	ug/L	500	64.1	1	09/29/12 13:10	10/01/12 18:01	7440-09-7	
Sodium	11500	ug/L	500	40.1	1	09/29/12 13:10	10/01/12 18:01	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	223000	ug/L	100	35.8	1	09/29/12 13:10	10/01/12 18:18	7440-70-2	B
Iron, Dissolved	ND	ug/L	50.0	17.2	1	09/29/12 13:10	10/01/12 18:18	7439-89-6	
Magnesium, Dissolved	19000	ug/L	50.0	17.2	1	09/29/12 13:10	10/01/12 18:18	7439-95-4	D9
Potassium, Dissolved	1700	ug/L	500	64.1	1	09/29/12 13:10	10/01/12 18:18	7440-09-7	D9
Sodium, Dissolved	11600	ug/L	500	40.1	1	09/29/12 13:10	10/01/12 18:18	7440-23-5	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.41J	ug/L	1.0	0.14	1	10/01/12 10:45	10/04/12 17:38	7440-38-2	
Cadmium	23.7	ug/L	0.50	0.097	1	10/01/12 10:45	10/04/12 17:38	7440-43-9	
Chromium	0.32J	ug/L	1.0	0.11	1	10/01/12 10:45	10/04/12 17:38	7440-47-3	
Cobalt	3.4	ug/L	1.0	0.048	1	10/01/12 10:45	10/04/12 17:38	7440-48-4	
Copper	39.5	ug/L	1.0	0.45	1	10/01/12 10:45	10/04/12 17:38	7440-50-8	
Lead	1.6	ug/L	1.0	0.051	1	10/01/12 10:45	10/04/12 17:38	7439-92-1	B
Manganese	2330	ug/L	1.0	0.23	1	10/01/12 10:45	10/04/12 17:38	7439-96-5	B,M1
Nickel	5.3	ug/L	1.0	0.35	1	10/01/12 10:45	10/04/12 17:38	7440-02-0	
Selenium	ND	ug/L	1.0	0.35	1	10/01/12 10:45	10/07/12 13:10	7782-49-2	
Zinc	4610	ug/L	10.0	1.6	1	10/01/12 10:45	10/04/12 17:38	7440-66-6	B,M1
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	9.6	ug/L	2.5	0.56	5	10/08/12 11:42	10/12/12 21:07	7439-93-2	
Arsenic, Dissolved	ND	ug/L	1.0	0.14	1	10/01/12 10:30	10/02/12 13:47	7440-38-2	
Cadmium, Dissolved	22.8	ug/L	0.50	0.097	1	10/01/12 10:30	10/02/12 13:47	7440-43-9	
Chromium, Dissolved	0.49J	ug/L	1.0	0.11	1	10/01/12 10:30	10/04/12 12:51	7440-47-3	
Cobalt, Dissolved	3.1	ug/L	1.0	0.048	1	10/01/12 10:30	10/04/12 12:51	7440-48-4	
Copper, Dissolved	3.4	ug/L	1.0	0.45	1	10/01/12 10:30	10/04/12 12:51	7440-50-8	B
Lead, Dissolved	ND	ug/L	1.0	0.051	1	10/01/12 10:30	10/02/12 13:47	7439-92-1	
Manganese, Dissolved	2380	ug/L	1.0	0.23	1	10/01/12 10:30	10/02/12 13:47	7439-96-5	B,D9
Nickel, Dissolved	4.4	ug/L	1.0	0.35	1	10/01/12 10:30	10/04/12 12:51	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.35	1	10/01/12 10:30	10/02/12 13:47	7782-49-2	
Zinc, Dissolved	4490	ug/L	10.0	1.6	1	10/01/12 10:30	10/02/12 13:47	7440-66-6	B
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.053	1	09/28/12 16:30	10/01/12 10:01	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	89.1	mg/L	20.0	1.2	1		09/29/12 08:36		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		09/29/12 08:36		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		09/29/12 08:36		

Date: 10/30/2012 10:26 AM

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ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

Sample: DR3A1209261800		Lab ID: 60129992002		Collected: 09/26/12 18:00		Received: 09/28/12 10:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO ₃	89.1	mg/L	20.0	1.2	1		09/29/12 08:36		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.25J	mg/L	1.0	0.078	1		09/28/12 19:30	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		09/28/12 19:30	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		09/28/12 19:30	16984-48-8	
Sulfate	617	mg/L	100	12.0	100		09/29/12 15:40	14808-79-8	

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

Sample: 517 SHAFT 465 Lab ID: 60129992005 Collected: 09/26/12 12:20 Received: 09/28/12 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	290000	ug/L	100	35.8	1	09/29/12 13:10	10/01/12 18:03	7440-70-2	
Iron	2190	ug/L	50.0	17.2	1	09/29/12 13:10	10/01/12 18:03	7439-89-6	
Magnesium	25600	ug/L	50.0	17.2	1	09/29/12 13:10	10/01/12 18:03	7439-95-4	
Potassium	1710	ug/L	500	64.1	1	09/29/12 13:10	10/01/12 18:03	7440-09-7	
Sodium	9880	ug/L	500	40.1	1	09/29/12 13:10	10/01/12 18:03	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	285000	ug/L	100	35.8	1	09/29/12 13:10	10/01/12 18:26	7440-70-2	B
Iron, Dissolved	668	ug/L	50.0	17.2	1	09/29/12 13:10	10/01/12 18:26	7439-89-6	
Magnesium, Dissolved	25400	ug/L	50.0	17.2	1	09/29/12 13:10	10/01/12 18:26	7439-95-4	
Potassium, Dissolved	1740	ug/L	500	64.1	1	09/29/12 13:10	10/01/12 18:26	7440-09-7	D9
Sodium, Dissolved	9840	ug/L	500	40.1	1	09/29/12 13:10	10/01/12 18:26	7440-23-5	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.69J	ug/L	1.0	0.14	1	10/01/12 10:45	10/04/12 17:46	7440-38-2	
Cadmium	68.8	ug/L	0.50	0.097	1	10/01/12 10:45	10/04/12 17:46	7440-43-9	
Chromium	1.8	ug/L	1.0	0.11	1	10/01/12 10:45	10/04/12 17:46	7440-47-3	
Cobalt	6.1	ug/L	1.0	0.048	1	10/01/12 10:45	10/04/12 17:46	7440-48-4	
Copper	237	ug/L	1.0	0.45	1	10/01/12 10:45	10/04/12 17:46	7440-50-8	
Lead	13.2	ug/L	1.0	0.051	1	10/01/12 10:45	10/04/12 17:46	7439-92-1	B
Manganese	4660	ug/L	1.0	0.23	1	10/01/12 10:45	10/04/12 17:46	7439-96-5	B
Nickel	13.0	ug/L	1.0	0.35	1	10/01/12 10:45	10/04/12 17:46	7440-02-0	
Selenium	ND	ug/L	1.0	0.35	1	10/01/12 10:45	10/07/12 13:14	7782-49-2	
Zinc	12600	ug/L	10.0	1.6	1	10/01/12 10:45	10/04/12 17:46	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	12.9	ug/L	2.5	0.56	5	10/08/12 11:42	10/12/12 21:13	7439-93-2	
Arsenic, Dissolved	0.28J	ug/L	1.0	0.14	1	10/01/12 10:30	10/02/12 13:51	7440-38-2	
Cadmium, Dissolved	73.2	ug/L	0.50	0.097	1	10/01/12 10:30	10/02/12 13:51	7440-43-9	D9
Chromium, Dissolved	0.22J	ug/L	1.0	0.11	1	10/01/12 10:30	10/04/12 12:55	7440-47-3	
Cobalt, Dissolved	5.9	ug/L	1.0	0.048	1	10/01/12 10:30	10/04/12 12:55	7440-48-4	
Copper, Dissolved	186	ug/L	1.0	0.45	1	10/01/12 10:30	10/04/12 12:55	7440-50-8	B
Lead, Dissolved	0.96J	ug/L	1.0	0.051	1	10/01/12 10:30	10/02/12 13:51	7439-92-1	
Manganese, Dissolved	4520	ug/L	5.0	1.2	5	10/01/12 10:30	10/04/12 13:32	7439-96-5	B
Nickel, Dissolved	12.9	ug/L	1.0	0.35	1	10/01/12 10:30	10/04/12 12:55	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.35	1	10/01/12 10:30	10/02/12 13:51	7782-49-2	
Zinc, Dissolved	11900	ug/L	10.0	1.6	1	10/01/12 10:30	10/02/12 13:51	7440-66-6	B
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.053	1	09/28/12 16:30	10/01/12 10:03	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	29.9	mg/L	20.0	1.2	1		09/29/12 08:39		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		09/29/12 08:39		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		09/29/12 08:39		

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ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

Sample: 517 SHAFT 465		Lab ID: 60129992005		Collected: 09/26/12 12:20		Received: 09/28/12 10:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO ₃	29.9	mg/L	20.0	1.2	1		09/29/12 08:39		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.14J	mg/L	1.0	0.078	1		09/28/12 19:46	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		09/28/12 19:46	16887-00-6	
Fluoride	3.2	mg/L	0.20	0.011	1		09/28/12 19:46	16984-48-8	
Sulfate	949	mg/L	100	12.0	100		09/29/12 16:27	14808-79-8	

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

Sample: DR3A1209270000 Lab ID: 60129992007 Collected: 09/27/12 08:00 Received: 09/28/12 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	218000	ug/L	100	35.8	1	09/29/12 13:10	10/01/12 18:05	7440-70-2	
Iron	3110	ug/L	50.0	17.2	1	09/29/12 13:10	10/01/12 18:05	7439-89-6	
Magnesium	18300	ug/L	50.0	17.2	1	09/29/12 13:10	10/01/12 18:05	7439-95-4	
Potassium	1630	ug/L	500	64.1	1	09/29/12 13:10	10/01/12 18:05	7440-09-7	
Sodium	11300	ug/L	500	40.1	1	09/29/12 13:10	10/01/12 18:05	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	230000	ug/L	100	35.8	1	09/29/12 13:10	10/01/12 18:28	7440-70-2	B,D9
Iron, Dissolved	ND	ug/L	50.0	17.2	1	09/29/12 13:10	10/01/12 18:28	7439-89-6	
Magnesium, Dissolved	19300	ug/L	50.0	17.2	1	09/29/12 13:10	10/01/12 18:28	7439-95-4	D9
Potassium, Dissolved	1770	ug/L	500	64.1	1	09/29/12 13:10	10/01/12 18:28	7440-09-7	D9
Sodium, Dissolved	12100	ug/L	500	40.1	1	09/29/12 13:10	10/01/12 18:28	7440-23-5	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.35J	ug/L	1.0	0.14	1	10/01/12 10:45	10/04/12 17:50	7440-38-2	
Cadmium	23.4	ug/L	0.50	0.097	1	10/01/12 10:45	10/04/12 17:50	7440-43-9	
Chromium	0.82J	ug/L	1.0	0.11	1	10/01/12 10:45	10/04/12 17:50	7440-47-3	
Cobalt	3.3	ug/L	1.0	0.048	1	10/01/12 10:45	10/04/12 17:50	7440-48-4	
Copper	42.1	ug/L	1.0	0.45	1	10/01/12 10:45	10/04/12 17:50	7440-50-8	
Lead	1.8	ug/L	1.0	0.051	1	10/01/12 10:45	10/04/12 17:50	7439-92-1	B
Manganese	2270	ug/L	1.0	0.23	1	10/01/12 10:45	10/04/12 17:50	7439-96-5	B
Nickel	5.2	ug/L	1.0	0.35	1	10/01/12 10:45	10/04/12 17:50	7440-02-0	
Selenium	ND	ug/L	1.0	0.35	1	10/01/12 10:45	10/07/12 13:30	7782-49-2	
Zinc	4510	ug/L	10.0	1.6	1	10/01/12 10:45	10/04/12 17:50	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	648	ug/L	2.5	0.56	5	10/08/12 11:42	10/12/12 21:18	7439-93-2	
Arsenic, Dissolved	ND	ug/L	1.0	0.14	1	10/01/12 10:30	10/02/12 13:55	7440-38-2	
Cadmium, Dissolved	19.9	ug/L	0.50	0.097	1	10/01/12 10:30	10/02/12 13:55	7440-43-9	
Chromium, Dissolved	0.14J	ug/L	1.0	0.11	1	10/01/12 10:30	10/04/12 13:03	7440-47-3	
Cobalt, Dissolved	2.8	ug/L	1.0	0.048	1	10/01/12 10:30	10/04/12 13:03	7440-48-4	
Copper, Dissolved	4.2	ug/L	1.0	0.45	1	10/01/12 10:30	10/04/12 13:03	7440-50-8	B
Lead, Dissolved	ND	ug/L	1.0	0.051	1	10/01/12 10:30	10/02/12 13:55	7439-92-1	
Manganese, Dissolved	2110	ug/L	1.0	0.23	1	10/01/12 10:30	10/02/12 13:55	7439-96-5	B
Nickel, Dissolved	4.0	ug/L	1.0	0.35	1	10/01/12 10:30	10/04/12 13:03	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.35	1	10/01/12 10:30	10/02/12 13:55	7782-49-2	
Zinc, Dissolved	3920	ug/L	10.0	1.6	1	10/01/12 10:30	10/02/12 13:55	7440-66-6	B
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.053	1	09/28/12 16:30	10/01/12 10:05	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	90.0	mg/L	20.0	1.2	1		09/29/12 08:43		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		09/29/12 08:43		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		09/29/12 08:43		

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ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

Sample: DR3A1209270000		Lab ID: 60129992007		Collected: 09/27/12 08:00		Received: 09/28/12 10:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO ₃	90.0	mg/L	20.0	1.2	1		09/29/12 08:43		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.16J	mg/L	1.0	0.078	1		09/28/12 20:33	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		09/28/12 20:33	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		09/28/12 20:33	16984-48-8	
Sulfate	626	mg/L	100	12.0	100		09/29/12 16:43	14808-79-8	

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

Sample: DR3A1209261200 RE		Lab ID: 60129992009	Collected: 09/26/12 12:00	Received: 09/28/12 10:30	Matrix: Water				
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Dissolved		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Lithium, Dissolved	29.1	ug/L	10.0	3.7	1	09/29/12 13:10	10/23/12 14:25	7439-93-2	

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

Sample: DR3A1209261800 RE		Lab ID: 60129992010		Collected: 09/26/12 18:00		Received: 09/28/12 10:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Dissolved		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Lithium, Dissolved	29.0	ug/L	10.0	3.7	1	09/29/12 13:10	10/23/12 14:28	7439-93-2	

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

Sample: 517 SHAFT 465 RE		Lab ID: 60129992011	Collected: 09/26/12 12:20	Received: 09/28/12 10:30	Matrix: Water				
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Dissolved		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Lithium, Dissolved	32.6	ug/L	10.0	3.7	1	09/29/12 13:10	10/23/12 14:42	7439-93-2	

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

Sample: DR3A1209270000 RE		Lab ID: 60129992012		Collected: 09/27/12 08:00		Received: 09/28/12 10:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Dissolved		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Lithium, Dissolved	29.9	ug/L	10.0	3.7	1	09/29/12 13:10	10/23/12 14:49	7439-93-2	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

QC Batch: ICPM/35515 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60129992001, 60129992002, 60129992005, 60129992007

METHOD BLANK: 1301168 Matrix: Water
Associated Lab Samples: 60129992001, 60129992002, 60129992005, 60129992007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lithium, Dissolved	ug/L	ND	0.50	10/12/12 20:30	

LABORATORY CONTROL SAMPLE: 1301169

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lithium, Dissolved	ug/L	80	83.9	105	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1304324 1304325

Parameter	Units	60130058008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lithium, Dissolved	ug/L	23.0	80	80	108	109	106	108	70-130	1	20	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

QC Batch: MERP/6670 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60129992001, 60129992002, 60129992005, 60129992007

METHOD BLANK: 1069334 Matrix: Water
Associated Lab Samples: 60129992001, 60129992002, 60129992005, 60129992007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	10/01/12 09:50	

LABORATORY CONTROL SAMPLE: 1069335

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.8	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1069336 1069337

Parameter	Units	60129992001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	5.0	4.7	99	94	70-130	5	20	

MATRIX SPIKE SAMPLE: 1069338

Parameter	Units	60129992002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	ND	5	4.5	90	70-130	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

QC Batch: MPRP/19704 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60129992001, 60129992002, 60129992005, 60129992007

METHOD BLANK: 1070020 Matrix: Water

Associated Lab Samples: 60129992001, 60129992002, 60129992005, 60129992007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	ug/L	ND	100	10/01/12 17:49	
Iron	ug/L	ND	50.0	10/01/12 17:49	
Magnesium	ug/L	ND	50.0	10/01/12 17:49	
Potassium	ug/L	ND	500	10/01/12 17:49	
Sodium	ug/L	ND	500	10/01/12 17:49	

LABORATORY CONTROL SAMPLE: 1070021

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	9080	91	85-115	
Iron	ug/L	10000	9000	90	85-115	
Magnesium	ug/L	10000	9230	92	85-115	
Potassium	ug/L	10000	10200	102	85-115	
Sodium	ug/L	10000	10300	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1070022 1070023

Parameter	Units	60129992001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	224000	10000	10000	241000	230000	173	68	70-130	4	9	M1
Iron	ug/L	3750	10000	10000	13400	12800	96	90	70-130	5	10	
Magnesium	ug/L	18700	10000	10000	29000	27800	102	90	70-130	4	9	
Potassium	ug/L	1720	10000	10000	13100	12300	114	106	70-130	6	7	
Sodium	ug/L	11500	10000	10000	23400	22000	119	106	70-130	6	8	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

QC Batch:	MPRP/19705	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Dissolved
Associated Lab Samples:	60129992001, 60129992002, 60129992005, 60129992007		

METHOD BLANK: 1070028 Matrix: Water

Associated Lab Samples: 60129992001, 60129992002, 60129992005, 60129992007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	146	100	10/01/12 18:14	
Iron, Dissolved	ug/L	ND	50.0	10/01/12 18:14	
Magnesium, Dissolved	ug/L	ND	50.0	10/01/12 18:14	
Potassium, Dissolved	ug/L	ND	500	10/01/12 18:14	
Sodium, Dissolved	ug/L	ND	500	10/01/12 18:14	

LABORATORY CONTROL SAMPLE: 1070029

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9330	93	85-115	
Iron, Dissolved	ug/L	10000	9240	92	85-115	
Magnesium, Dissolved	ug/L	10000	9550	95	85-115	
Potassium, Dissolved	ug/L	10000	10500	105	85-115	
Sodium, Dissolved	ug/L	10000	10700	107	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1070030 1070031

Parameter	Units	60129992002		MS		MSD		MS		MSD		% Rec		Max	
		Result	Conc.	Spike Conc.	Result	Spike Conc.	Result	% Rec	Result	% Rec	Result	Limits	RPD	RPD	Qual
Calcium, Dissolved	ug/L	223000	10000	10000	234000	232000	106	92	70-130	1	9				
Iron, Dissolved	ug/L	ND	10000	10000	9260	9130	92	91	70-130	1	10				
Magnesium, Dissolved	ug/L	19000	10000	10000	28500	28300	95	93	70-130	1	9				
Potassium, Dissolved	ug/L	1700	10000	10000	12800	12500	110	108	70-130	2	7				
Sodium, Dissolved	ug/L	11600	10000	10000	23100	22700	114	111	70-130	1	8				

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

QC Batch: MPRP/20145

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60129992009, 60129992010, 60129992011, 60129992012

METHOD BLANK: 1085766

Matrix: Water

Associated Lab Samples: 60129992009, 60129992010, 60129992011, 60129992012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lithium, Dissolved	ug/L	ND	10.0	10/23/12 14:18	

LABORATORY CONTROL SAMPLE: 1085767

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lithium, Dissolved	ug/L	1000	998	100	85-115	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

QC Batch: MPRP/19710 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60129992001, 60129992002, 60129992005, 60129992007

METHOD BLANK: 1070686 Matrix: Water

Associated Lab Samples: 60129992001, 60129992002, 60129992005, 60129992007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	10/04/12 17:17	
Cadmium	ug/L	ND	0.50	10/04/12 17:17	
Chromium	ug/L	ND	1.0	10/04/12 17:17	
Cobalt	ug/L	ND	1.0	10/04/12 17:17	
Copper	ug/L	ND	1.0	10/04/12 17:17	
Lead	ug/L	0.22J	1.0	10/04/12 17:17	
Manganese	ug/L	0.46J	1.0	10/04/12 17:17	
Nickel	ug/L	ND	1.0	10/04/12 17:17	
Selenium	ug/L	ND	1.0	10/07/12 12:41	
Zinc	ug/L	4.9J	10.0	10/04/12 17:17	

LABORATORY CONTROL SAMPLE: 1070687

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	44.3	111	85-115	
Cadmium	ug/L	40	44.0	110	85-115	
Chromium	ug/L	40	45.1	113	85-115	
Cobalt	ug/L	40	44.3	111	85-115	
Copper	ug/L	40	43.8	109	85-115	
Lead	ug/L	40	44.1	110	85-115	
Manganese	ug/L	40	45.8	114	85-115	
Nickel	ug/L	40	45.5	114	85-115	
Selenium	ug/L	40	41.1	103	85-115	
Zinc	ug/L	100	108	108	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1070688 1070689

Parameter	Units	60129992002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	0.41J	40	40	41.5	43.4	103	108	70-130	4	20	
Cadmium	ug/L	23.7	40	40	64.5	66.8	102	108	70-130	3	20	
Chromium	ug/L	0.32J	40	40	41.1	43.8	102	109	70-130	6	20	
Cobalt	ug/L	3.4	40	40	43.5	46.0	100	106	70-130	6	20	
Copper	ug/L	39.5	40	40	76.4	80.9	92	103	70-130	6	20	
Lead	ug/L	1.6	40	40	41.9	44.4	101	107	70-130	6	20	
Manganese	ug/L	2330	40	40	2230	2350	-235	50	70-130	5	20 M1	
Nickel	ug/L	5.3	40	40	45.3	47.5	100	105	70-130	5	20	
Selenium	ug/L	ND	40	40	41.6	40.7	104	102	70-130	2	20	
Zinc	ug/L	4610	100	100	4470	4660	-140	49	70-130	4	20 M1	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

MATRIX SPIKE SAMPLE:		1070690					
Parameter	Units	60129936001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	1.3	40	43.4	105	70-130	
Cadmium	ug/L	ND	40	43.1	108	70-130	
Chromium	ug/L	ND	40	41.4	102	70-130	
Cobalt	ug/L	ND	40	40.0	99	70-130	
Copper	ug/L	1.9	40	39.9	95	70-130	
Lead	ug/L	ND	40	43.4	108	70-130	
Manganese	ug/L	83.0	40	126	106	70-130	
Nickel	ug/L	1.9	40	41.6	99	70-130	
Selenium	ug/L	ND	40	41.7	104	70-130	
Zinc	ug/L	ND	100	113	110	70-130	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

QC Batch: MPRP/19708 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60129992001, 60129992002, 60129992005, 60129992007

METHOD BLANK: 1070658 Matrix: Water

Associated Lab Samples: 60129992001, 60129992002, 60129992005, 60129992007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	10/02/12 13:23	
Cadmium, Dissolved	ug/L	ND	0.50	10/02/12 13:23	
Chromium, Dissolved	ug/L	ND	1.0	10/04/12 12:26	
Cobalt, Dissolved	ug/L	ND	1.0	10/04/12 12:26	
Copper, Dissolved	ug/L	0.55J	1.0	10/04/12 12:26	
Lead, Dissolved	ug/L	ND	1.0	10/02/12 13:23	
Manganese, Dissolved	ug/L	0.69J	1.0	10/02/12 13:23	
Nickel, Dissolved	ug/L	ND	1.0	10/04/12 12:26	
Selenium, Dissolved	ug/L	ND	1.0	10/02/12 13:23	
Zinc, Dissolved	ug/L	8.7J	10.0	10/02/12 13:23	

LABORATORY CONTROL SAMPLE: 1070659

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	40.4	101	85-115	
Cadmium, Dissolved	ug/L	40	40.1	100	85-115	
Chromium, Dissolved	ug/L	40	40.0	100	85-115	
Cobalt, Dissolved	ug/L	40	39.8	99	85-115	
Copper, Dissolved	ug/L	40	39.8	100	85-115	
Lead, Dissolved	ug/L	40	40.3	101	85-115	
Manganese, Dissolved	ug/L	40	41.9	105	85-115	
Nickel, Dissolved	ug/L	40	40.4	101	85-115	
Selenium, Dissolved	ug/L	40	40.7	102	85-115	
Zinc, Dissolved	ug/L	100	114	114	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1070660 1070661

Parameter	Units	60129992001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	0.18J	40	40	41.3	38.2	103	95	70-130	8	20	
Cadmium, Dissolved	ug/L	21.7	40	40	64.7	61.6	107	100	70-130	5	20	
Chromium, Dissolved	ug/L	0.23J	40	40	40.1	38.6	100	96	70-130	4	20	
Cobalt, Dissolved	ug/L	3.0	40	40	41.9	40.1	97	93	70-130	4	20	
Copper, Dissolved	ug/L	8.6	40	40	47.2	44.5	96	90	70-130	6	20	
Lead, Dissolved	ug/L	ND	40	40	40.8	38.7	102	97	70-130	5	20	
Manganese, Dissolved	ug/L	2110	40	40	2260	2200	380	235	70-130	3	20 M1	
Nickel, Dissolved	ug/L	3.7	40	40	43.4	42.1	99	96	70-130	3	20	
Selenium, Dissolved	ug/L	ND	40	40	39.5	37.4	99	93	70-130	6	20	
Zinc, Dissolved	ug/L	4060	100	100	4470	4270	410	209	70-130	5	20 M1	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

QC Batch: WET/37403 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60129992001, 60129992002, 60129992005, 60129992007

METHOD BLANK: 1069579 Matrix: Water

Associated Lab Samples: 60129992001, 60129992002, 60129992005, 60129992007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	09/29/12 08:19	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	09/29/12 08:19	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	09/29/12 08:19	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	09/29/12 08:19	

LABORATORY CONTROL SAMPLE: 1069580

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	490	98	90-110	

SAMPLE DUPLICATE: 1069581

Parameter	Units	60129992001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	90.2	88.9	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	90.2	88.9	1	9	

SAMPLE DUPLICATE: 1069582

Parameter	Units	60129866006 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	420	414	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	420	414	1	9	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

QC Batch: WETA/21827 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60129992001, 60129992002, 60129992005, 60129992007

METHOD BLANK: 1069330 Matrix: Water

Associated Lab Samples: 60129992001, 60129992002, 60129992005, 60129992007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	09/28/12 18:11	
Chloride	mg/L	ND	1.0	09/28/12 18:11	
Fluoride	mg/L	ND	0.20	09/28/12 18:11	

METHOD BLANK: 1069882 Matrix: Water

Associated Lab Samples: 60129992001, 60129992002, 60129992005, 60129992007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.0	09/29/12 14:22	

LABORATORY CONTROL SAMPLE: 1069331

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.9	98	90-110	
Chloride	mg/L	5	4.8	95	90-110	
Fluoride	mg/L	2.5	2.5	98	90-110	

LABORATORY CONTROL SAMPLE: 1069883

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1069332 1069333

Parameter	Units	60129992001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	0.15J	5	5	5.0	4.9	96	94	75-119	2	10	
Chloride	mg/L	ND	5	5	5.2	5.1	102	101	64-118	1	12	
Fluoride	mg/L	2.3	2.5	2.5	4.9	4.9	106	104	75-110	1	10	
Sulfate	mg/L	615	500	500	1100	1100	96	96	61-119	0	10	

QUALIFIERS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

PASI-M Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60129992

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60129992001	DR3A1209261200	EPA 200.7	MPRP/19704	EPA 200.7	ICP/16228
60129992002	DR3A1209261800	EPA 200.7	MPRP/19704	EPA 200.7	ICP/16228
60129992005	517 SHAFT 465	EPA 200.7	MPRP/19704	EPA 200.7	ICP/16228
60129992007	DR3A1209270000	EPA 200.7	MPRP/19704	EPA 200.7	ICP/16228
60129992001	DR3A1209261200	EPA 200.7	MPRP/19705	EPA 200.7	ICP/16229
60129992002	DR3A1209261800	EPA 200.7	MPRP/19705	EPA 200.7	ICP/16229
60129992005	517 SHAFT 465	EPA 200.7	MPRP/19705	EPA 200.7	ICP/16229
60129992007	DR3A1209270000	EPA 200.7	MPRP/19705	EPA 200.7	ICP/16229
60129992009	DR3A1209261200 RE	EPA 200.7	MPRP/20145	EPA 200.7	ICP/16500
60129992010	DR3A1209261800 RE	EPA 200.7	MPRP/20145	EPA 200.7	ICP/16500
60129992011	517 SHAFT 465 RE	EPA 200.7	MPRP/20145	EPA 200.7	ICP/16500
60129992012	DR3A1209270000 RE	EPA 200.7	MPRP/20145	EPA 200.7	ICP/16500
60129992001	DR3A1209261200	EPA 200.8	MPRP/19710	EPA 200.8	ICPM/1669
60129992002	DR3A1209261800	EPA 200.8	MPRP/19710	EPA 200.8	ICPM/1669
60129992005	517 SHAFT 465	EPA 200.8	MPRP/19710	EPA 200.8	ICPM/1669
60129992007	DR3A1209270000	EPA 200.8	MPRP/19710	EPA 200.8	ICPM/1669
60129992001	DR3A1209261200	EPA 200.8	ICPM/35515	EPA 200.8	ICPM/14074
60129992001	DR3A1209261200	EPA 200.8	MPRP/19708	EPA 200.8	ICPM/1668
60129992002	DR3A1209261800	EPA 200.8	ICPM/35515	EPA 200.8	ICPM/14074
60129992002	DR3A1209261800	EPA 200.8	MPRP/19708	EPA 200.8	ICPM/1668
60129992005	517 SHAFT 465	EPA 200.8	ICPM/35515	EPA 200.8	ICPM/14074
60129992005	517 SHAFT 465	EPA 200.8	MPRP/19708	EPA 200.8	ICPM/1668
60129992007	DR3A1209270000	EPA 200.8	ICPM/35515	EPA 200.8	ICPM/14074
60129992007	DR3A1209270000	EPA 200.8	MPRP/19708	EPA 200.8	ICPM/1668
60129992001	DR3A1209261200	EPA 245.1	MERP/6670	EPA 245.1	MERC/6626
60129992002	DR3A1209261800	EPA 245.1	MERP/6670	EPA 245.1	MERC/6626
60129992005	517 SHAFT 465	EPA 245.1	MERP/6670	EPA 245.1	MERC/6626
60129992007	DR3A1209270000	EPA 245.1	MERP/6670	EPA 245.1	MERC/6626
60129992001	DR3A1209261200	SM 2320B	WET/37403		
60129992002	DR3A1209261800	SM 2320B	WET/37403		
60129992005	517 SHAFT 465	SM 2320B	WET/37403		
60129992007	DR3A1209270000	SM 2320B	WET/37403		
60129992001	DR3A1209261200	EPA 300.0	WETA/21827		
60129992002	DR3A1209261800	EPA 300.0	WETA/21827		
60129992005	517 SHAFT 465	EPA 300.0	WETA/21827		
60129992007	DR3A1209270000	EPA 300.0	WETA/21827		

June 30, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: Rico-Argentine Mine Site
Pace Project No.: 60129994

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on September 28, 2012. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Rico-Argentine Mine Site

Pace Project No.: 60129994

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414

A2LA Certification #: 2926.01

Alaska Certification #: UST-078

Alaska Certification #MN00064

Arizona Certification #: AZ-0014

Arkansas Certification #: 88-0680

California Certification #: 01155CA

Colorado Certification #Pace

Connecticut Certification #: PH-0256

EPA Region 8 Certification #: Pace

Florida/NELAP Certification #: E87605

Georgia Certification #: 959

Hawaii Certification #Pace

Idaho Certification #: MN00064

Illinois Certification #: 200011

Kansas Certification #: E-10167

Louisiana Certification #: 03086

Louisiana Certification #: LA080009

Maine Certification #: 2007029

Maryland Certification #: 322

Michigan DEQ Certification #: 9909

Minnesota Certification #: 027-053-137

Mississippi Certification #: Pace

Montana Certification #: MT CERT0092

Nevada Certification #: MN_00064

Nebraska Certification #: Pace

New Jersey Certification #: MN-002

New York Certification #: 11647

North Carolina Certification #: 530

North Dakota Certification #: R-036

North Dakota Certification #: R-036A

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Certification #: MN200001

Oregon Certification #: MN300001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification

Tennessee Certification #: 02818

Texas Certification #: T104704192

Utah Certification #: MN00064

Virginia/DCLS Certification #: 002521

Virginia/VELAP Certification #: 460163

Washington Certification #: C754

West Virginia Certification #: 382

Wisconsin Certification #: 999407970

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

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SAMPLE SUMMARY

Project: Rico-Argentine Mine Site

Pace Project No.: 60129994

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60129992003	DR3A1209262200	Water	09/26/12 22:00	09/28/12 10:30
60129992004	DR3A1209262000	Water	09/26/12 20:00	09/28/12 10:30
60129992006	SILVER CREEK	Water	09/26/12 12:30	09/28/12 10:30
60129992008	DR3A1209270200	Water	09/27/12 02:00	09/28/12 10:30

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SAMPLE ANALYTE COUNT

Project: Rico-Argentine Mine Site

Pace Project No.: 60129994

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60129992006	SILVER CREEK	EPA 200.7	SMW	5	PASI-K
		EPA 200.7	JGP	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	AS2	1	PASI-M
		EPA 245.1	TDS	1	PASI-K
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60129994

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: June 30, 2013

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19753

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60129844002,60130227005

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1071772)
 - Sodium
- MS (Lab ID: 1071774)
 - Calcium
- MSD (Lab ID: 1071773)
 - Sodium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60129994

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: June 30, 2013

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/19705

B: Analyte was detected in the associated method blank.

- BLANK for HBN 261801 [MPRP/197 (Lab ID: 1070028)]
- Calcium, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60129994

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: June 30, 2013

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/19710

B: Analyte was detected in the associated method blank.

- BLANK for HBN 261932 [MPRP/197 (Lab ID: 1070686)]
 - Lead
 - Manganese
 - Zinc

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19710

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60129936001,60129992002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1070688)
 - Manganese
 - Zinc
- MSD (Lab ID: 1070689)
 - Manganese
 - Zinc

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60129994

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: June 30, 2013

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60129994

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: June 30, 2013

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/19708

B: Analyte was detected in the associated method blank.

- BLANK for HBN 261907 [MPRP/197 (Lab ID: 1070658)]
 - Copper, Dissolved
 - Manganese, Dissolved
 - Zinc, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19708

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60129992001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1070660)
 - Manganese, Dissolved
 - Zinc, Dissolved
- MSD (Lab ID: 1070661)
 - Manganese, Dissolved
 - Zinc, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60129994

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: June 30, 2013

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60129994

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: June 30, 2013

General Information:

1 sample was analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60129994

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: June 30, 2013

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60129994

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: June 30, 2013

General Information:

1 sample was analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site
Pace Project No.: 60129994

Sample: SILVER CREEK Lab ID: 60129992006 Collected: 09/26/12 12:30 Received: 09/28/12 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	41300	ug/L	100	35.8	1	10/02/12 18:00	10/04/12 12:02	7440-70-2	
Iron	112	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 12:02	7439-89-6	
Magnesium	4900	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 12:02	7439-95-4	
Potassium	626	ug/L	500	64.1	1	10/02/12 18:00	10/04/12 12:02	7440-09-7	
Sodium	1920	ug/L	500	40.1	1	10/02/12 18:00	10/04/12 12:02	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	40500	ug/L	100	35.8	1	09/29/12 13:10	10/01/12 18:30	7440-70-2	B
Iron, Dissolved	ND	ug/L	50.0	17.2	1	09/29/12 13:10	10/01/12 18:30	7439-89-6	
Magnesium, Dissolved	4570	ug/L	50.0	17.2	1	09/29/12 13:10	10/01/12 18:30	7439-95-4	
Potassium, Dissolved	639	ug/L	500	64.1	1	09/29/12 13:10	10/01/12 18:30	7440-09-7	D9
Sodium, Dissolved	1890	ug/L	500	40.1	1	09/29/12 13:10	10/01/12 18:30	7440-23-5	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.59J	ug/L	1.0	0.14	1	10/01/12 10:45	10/04/12 18:27	7440-38-2	
Cadmium	2.2	ug/L	0.50	0.097	1	10/01/12 10:45	10/04/12 18:27	7440-43-9	
Chromium	0.64J	ug/L	1.0	0.11	1	10/01/12 10:45	10/04/12 18:27	7440-47-3	
Cobalt	0.086J	ug/L	1.0	0.048	1	10/01/12 10:45	10/04/12 18:27	7440-48-4	
Copper	2.5	ug/L	1.0	0.45	1	10/01/12 10:45	10/04/12 18:27	7440-50-8	
Lead	4.9	ug/L	1.0	0.051	1	10/01/12 10:45	10/04/12 18:27	7439-92-1	B
Manganese	29.8	ug/L	1.0	0.23	1	10/01/12 10:45	10/04/12 18:27	7439-96-5	B
Nickel	ND	ug/L	1.0	0.35	1	10/01/12 10:45	10/04/12 18:27	7440-02-0	
Selenium	ND	ug/L	1.0	0.35	1	10/01/12 10:45	10/07/12 13:18	7782-49-2	
Zinc	406	ug/L	10.0	1.6	1	10/01/12 10:45	10/04/12 18:27	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Lithium, Dissolved	2.7	ug/L	0.50	0.11	1	10/11/12 12:40	10/13/12 13:47	7439-93-2	
Arsenic, Dissolved	0.64J	ug/L	1.0	0.14	1	10/01/12 10:30	10/02/12 14:24	7440-38-2	
Cadmium, Dissolved	1.9	ug/L	0.50	0.097	1	10/01/12 10:30	10/02/12 14:24	7440-43-9	
Chromium, Dissolved	0.48J	ug/L	1.0	0.11	1	10/01/12 10:30	10/04/12 12:59	7440-47-3	
Cobalt, Dissolved	0.060J	ug/L	1.0	0.048	1	10/01/12 10:30	10/04/12 12:59	7440-48-4	
Copper, Dissolved	2.6	ug/L	1.0	0.45	1	10/01/12 10:30	10/04/12 12:59	7440-50-8	B,D9
Lead, Dissolved	4.5	ug/L	1.0	0.051	1	10/01/12 10:30	10/02/12 14:24	7439-92-1	
Manganese, Dissolved	27.8	ug/L	1.0	0.23	1	10/01/12 10:30	10/02/12 14:24	7439-96-5	B
Nickel, Dissolved	ND	ug/L	1.0	0.35	1	10/01/12 10:30	10/04/12 12:59	7440-02-0	
Selenium, Dissolved	0.42J	ug/L	1.0	0.35	1	10/01/12 10:30	10/02/12 14:24	7782-49-2	
Zinc, Dissolved	336	ug/L	10.0	1.6	1	10/01/12 10:30	10/02/12 14:24	7440-66-6	B
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.053	1	10/01/12 13:00	10/02/12 10:14	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	106	mg/L	20.0	1.2	1		10/01/12 13:55		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/01/12 13:55		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/01/12 13:55		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60129994

Sample: SILVER CREEK		Lab ID: 60129992006	Collected: 09/26/12 12:30	Received: 09/28/12 10:30	Matrix: Water				
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO ₃	106	mg/L	20.0	1.2	1		10/01/12 13:55		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.10J	mg/L	1.0	0.078	1		10/07/12 03:40	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		10/07/12 03:40	16887-00-6	
Fluoride	0.13J	mg/L	0.20	0.011	1		10/07/12 03:40	16984-48-8	
Sulfate	20.3	mg/L	2.0	0.24	2		10/07/12 13:16	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60129994

QC Batch: MERP/6674

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury

Associated Lab Samples: 60129992006

METHOD BLANK: 1070829

Matrix: Water

Associated Lab Samples: 60129992006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	10/02/12 10:01	

LABORATORY CONTROL SAMPLE: 1070830

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.3	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1070831 1070832

Parameter	Units	60130021001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	5.3	5.1	106	103	70-130	3	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60129994

QC Batch: MPRP/19753 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60129992006

METHOD BLANK: 1071770 Matrix: Water
Associated Lab Samples: 60129992006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	ug/L	ND	100	10/04/12 10:51	
Iron	ug/L	ND	50.0	10/04/12 10:51	
Magnesium	ug/L	ND	50.0	10/04/12 10:51	
Potassium	ug/L	ND	500	10/04/12 10:51	
Sodium	ug/L	ND	500	10/04/12 10:51	

LABORATORY CONTROL SAMPLE: 1071771

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	9580	96	85-115	
Iron	ug/L	10000	9850	99	85-115	
Magnesium	ug/L	10000	9960	100	85-115	
Potassium	ug/L	10000	10100	101	85-115	
Sodium	ug/L	10000	10200	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1071772 1071773

Parameter	Units	60129844002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L		10000	10000	115000	118000	73	98	70-130	2	9	
Iron	ug/L	3710	10000	10000	13300	13400	96	97	70-130	1	10	
Magnesium	ug/L		10000	10000	24400	24900	89	94	70-130	2	9	
Potassium	ug/L	9360	10000	10000	19400	19600	100	103	70-130	1	7	
Sodium	ug/L	189000	10000	10000	192000	195000	34	59	70-130	1	8 M1	

MATRIX SPIKE SAMPLE: 1071774

Parameter	Units	60130227005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	232000	10000	231000	-15	70-130	M1
Iron	ug/L	3740	10000	13000	92	70-130	
Magnesium	ug/L	19900	10000	28000	80	70-130	
Potassium	ug/L	8680	10000	18400	97	70-130	
Sodium	ug/L	11500	10000	20500	90	70-130	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60129994

QC Batch:	MPRP/19705	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Dissolved
Associated Lab Samples:	60129992006		

METHOD BLANK: 1070028 Matrix: Water
Associated Lab Samples: 60129992006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	146	100	10/01/12 18:14	
Iron, Dissolved	ug/L	ND	50.0	10/01/12 18:14	
Magnesium, Dissolved	ug/L	ND	50.0	10/01/12 18:14	
Potassium, Dissolved	ug/L	ND	500	10/01/12 18:14	
Sodium, Dissolved	ug/L	ND	500	10/01/12 18:14	

LABORATORY CONTROL SAMPLE: 1070029

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9330	93	85-115	
Iron, Dissolved	ug/L	10000	9240	92	85-115	
Magnesium, Dissolved	ug/L	10000	9550	95	85-115	
Potassium, Dissolved	ug/L	10000	10500	105	85-115	
Sodium, Dissolved	ug/L	10000	10700	107	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1070030 1070031

Parameter	Units	60129992002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium, Dissolved	ug/L	223000	10000	10000	234000	232000	106	92	70-130	1	9	
Iron, Dissolved	ug/L	ND	10000	10000	9260	9130	92	91	70-130	1	10	
Magnesium, Dissolved	ug/L	19000	10000	10000	28500	28300	95	93	70-130	1	9	
Potassium, Dissolved	ug/L	1700	10000	10000	12800	12500	110	108	70-130	2	7	
Sodium, Dissolved	ug/L	11600	10000	10000	23100	22700	114	111	70-130	1	8	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60129994

QC Batch: MPRP/19710 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60129992006

METHOD BLANK: 1070686 Matrix: Water
Associated Lab Samples: 60129992006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	10/04/12 17:17	
Cadmium	ug/L	ND	0.50	10/04/12 17:17	
Chromium	ug/L	ND	1.0	10/04/12 17:17	
Cobalt	ug/L	ND	1.0	10/04/12 17:17	
Copper	ug/L	ND	1.0	10/04/12 17:17	
Lead	ug/L	0.22J	1.0	10/04/12 17:17	
Manganese	ug/L	0.46J	1.0	10/04/12 17:17	
Nickel	ug/L	ND	1.0	10/04/12 17:17	
Selenium	ug/L	ND	1.0	10/07/12 12:41	
Zinc	ug/L	4.9J	10.0	10/04/12 17:17	

LABORATORY CONTROL SAMPLE: 1070687

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	44.3	111	85-115	
Cadmium	ug/L	40	44.0	110	85-115	
Chromium	ug/L	40	45.1	113	85-115	
Cobalt	ug/L	40	44.3	111	85-115	
Copper	ug/L	40	43.8	109	85-115	
Lead	ug/L	40	44.1	110	85-115	
Manganese	ug/L	40	45.8	114	85-115	
Nickel	ug/L	40	45.5	114	85-115	
Selenium	ug/L	40	41.1	103	85-115	
Zinc	ug/L	100	108	108	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1070688 1070689

Parameter	Units	60129992002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	0.41J	40	40	41.5	43.4	103	108	70-130	4	20	
Cadmium	ug/L	23.7	40	40	64.5	66.8	102	108	70-130	3	20	
Chromium	ug/L	0.32J	40	40	41.1	43.8	102	109	70-130	6	20	
Cobalt	ug/L	3.4	40	40	43.5	46.0	100	106	70-130	6	20	
Copper	ug/L	39.5	40	40	76.4	80.9	92	103	70-130	6	20	
Lead	ug/L	1.6	40	40	41.9	44.4	101	107	70-130	6	20	
Manganese	ug/L	2330	40	40	2230	2350	-235	50	70-130	5	20 M1	
Nickel	ug/L	5.3	40	40	45.3	47.5	100	105	70-130	5	20	
Selenium	ug/L	ND	40	40	41.6	40.7	104	102	70-130	2	20	
Zinc	ug/L	4610	100	100	4470	4660	-140	49	70-130	4	20 M1	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60129994

MATRIX SPIKE SAMPLE:		1070690					
Parameter	Units	60129936001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	1.3	40	43.4	105	70-130	
Cadmium	ug/L	ND	40	43.1	108	70-130	
Chromium	ug/L	ND	40	41.4	102	70-130	
Cobalt	ug/L	ND	40	40.0	99	70-130	
Copper	ug/L	1.9	40	39.9	95	70-130	
Lead	ug/L	ND	40	43.4	108	70-130	
Manganese	ug/L	83.0	40	126	106	70-130	
Nickel	ug/L	1.9	40	41.6	99	70-130	
Selenium	ug/L	ND	40	41.7	104	70-130	
Zinc	ug/L	ND	100	113	110	70-130	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60129994

QC Batch: MPRP/19708 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60129992006

METHOD BLANK: 1070658 Matrix: Water
Associated Lab Samples: 60129992006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	10/02/12 13:23	
Cadmium, Dissolved	ug/L	ND	0.50	10/02/12 13:23	
Chromium, Dissolved	ug/L	ND	1.0	10/04/12 12:26	
Cobalt, Dissolved	ug/L	ND	1.0	10/04/12 12:26	
Copper, Dissolved	ug/L	0.55J	1.0	10/04/12 12:26	
Lead, Dissolved	ug/L	ND	1.0	10/02/12 13:23	
Manganese, Dissolved	ug/L	0.69J	1.0	10/02/12 13:23	
Nickel, Dissolved	ug/L	ND	1.0	10/04/12 12:26	
Selenium, Dissolved	ug/L	ND	1.0	10/02/12 13:23	
Zinc, Dissolved	ug/L	8.7J	10.0	10/02/12 13:23	

LABORATORY CONTROL SAMPLE: 1070659

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	40.4	101	85-115	
Cadmium, Dissolved	ug/L	40	40.1	100	85-115	
Chromium, Dissolved	ug/L	40	40.0	100	85-115	
Cobalt, Dissolved	ug/L	40	39.8	99	85-115	
Copper, Dissolved	ug/L	40	39.8	100	85-115	
Lead, Dissolved	ug/L	40	40.3	101	85-115	
Manganese, Dissolved	ug/L	40	41.9	105	85-115	
Nickel, Dissolved	ug/L	40	40.4	101	85-115	
Selenium, Dissolved	ug/L	40	40.7	102	85-115	
Zinc, Dissolved	ug/L	100	114	114	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1070660 1070661

Parameter	Units	60129992001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	0.18J	40	40	41.3	38.2	103	95	70-130	8	20	
Cadmium, Dissolved	ug/L	21.7	40	40	64.7	61.6	107	100	70-130	5	20	
Chromium, Dissolved	ug/L	0.23J	40	40	40.1	38.6	100	96	70-130	4	20	
Cobalt, Dissolved	ug/L	3.0	40	40	41.9	40.1	97	93	70-130	4	20	
Copper, Dissolved	ug/L	8.6	40	40	47.2	44.5	96	90	70-130	6	20	
Lead, Dissolved	ug/L	ND	40	40	40.8	38.7	102	97	70-130	5	20	
Manganese, Dissolved	ug/L	2110	40	40	2260	2200	380	235	70-130	3	20 M1	
Nickel, Dissolved	ug/L	3.7	40	40	43.4	42.1	99	96	70-130	3	20	
Selenium, Dissolved	ug/L	ND	40	40	39.5	37.4	99	93	70-130	6	20	
Zinc, Dissolved	ug/L	4060	100	100	4470	4270	410	209	70-130	5	20 M1	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60129994

QC Batch:	MPRP/35658	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET Dissolved
Associated Lab Samples:	60129992006		

METHOD BLANK: 1307209 Matrix: Water
Associated Lab Samples: 60129992006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lithium, Dissolved	ug/L	ND	0.50	10/12/12 18:23	

LABORATORY CONTROL SAMPLE: 1307210

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lithium, Dissolved	ug/L	80	84.7	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1307211 1307212

Parameter	Units	60130685003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lithium, Dissolved	ug/L	74.7	80	80	160	160	107	107	70-130	.09	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60129994

QC Batch: WET/37418 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60129992006

METHOD BLANK: 1070556 Matrix: Water
Associated Lab Samples: 60129992006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	10/01/12 12:01	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	10/01/12 12:01	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	10/01/12 12:01	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	10/01/12 12:01	

LABORATORY CONTROL SAMPLE: 1070557

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	488	98	90-110	

SAMPLE DUPLICATE: 1070558

Parameter	Units	60129785001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	62.5	62.0	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	62.5	62.0	1	9	

SAMPLE DUPLICATE: 1070559

Parameter	Units	60129992006 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	106	106	0	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	106	106	0	9	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60129994

QC Batch: WETA/21930 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60129992006

METHOD BLANK: 1075298 Matrix: Water
Associated Lab Samples: 60129992006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	10/06/12 20:36	
Chloride	mg/L	ND	1.0	10/06/12 20:36	
Fluoride	mg/L	ND	0.20	10/06/12 20:36	

METHOD BLANK: 1075305 Matrix: Water
Associated Lab Samples: 60129992006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	10/07/12 09:04	
Chloride	mg/L	ND	1.0	10/07/12 09:04	
Fluoride	mg/L	ND	0.20	10/07/12 09:04	

LABORATORY CONTROL SAMPLE: 1075299

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.9	98	90-110	
Chloride	mg/L	5	4.5	91	90-110	
Fluoride	mg/L	2.5	2.4	97	90-110	

LABORATORY CONTROL SAMPLE: 1075306

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.9	97	90-110	
Chloride	mg/L	5	4.5	90	90-110	
Fluoride	mg/L	2.5	2.4	95	90-110	

MATRIX SPIKE SAMPLE: 1075301

Parameter	Units	60129746001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	250	250	100	75-119	
Fluoride	mg/L	1.3J	125	109	86	75-110	

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Rico-Argentine Mine Site

Pace Project No.: 60129994

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

PASI-M Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rico-Argentine Mine Site

Pace Project No.: 60129994

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60129992006	SILVER CREEK	EPA 200.7	MPRP/19753	EPA 200.7	ICP/16269
60129992006	SILVER CREEK	EPA 200.7	MPRP/19705	EPA 200.7	ICP/16229
60129992006	SILVER CREEK	EPA 200.8	MPRP/19710	EPA 200.8	ICPM/1669
60129992006	SILVER CREEK	EPA 200.8	MPRP/35658	EPA 200.8	ICPM/14075
60129992006	SILVER CREEK	EPA 200.8	MPRP/19708	EPA 200.8	ICPM/1668
60129992006	SILVER CREEK	EPA 245.1	MERP/6674	EPA 245.1	MERC/6630
60129992006	SILVER CREEK	SM 2320B	WET/37418		
60129992006	SILVER CREEK	EPA 300.0	WETA/21930		

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Laboratory Management Program LAMP Chain of Custody Record

Page ____ of ____

BP/ARC Project Name: Rico-Argentine Mine Site

Req Due Date (mm/dd/yy): _____ Rush TAT: Yes ____ No X

BP/ARC Facility No: _____

Lab Work Order Number: _____

Lab Name: Pace Analytical Laboratories, Inc.				BP/ARC Facility Address: Rico-Argentine Mine				Consultant/Contractor: AMEC E&I, Inc.															
Lab Address: 9608 Loiret Blvd., Lenexa, KS 66219				City, State, ZIP Code: Rico, Colorado				Consultant/Contractor Project No: SA11161302.200B															
Lab PM: Heather Wilson				Lead Regulatory Agency: U.S. EPA Region 8				Address: 10670 White Rock Road, Suite 100, Rancho Cordova, CA															
Lab Phone: (913) 563-1407				California Global ID No.: NA				Consultant/Contractor PM: Marc Lombardi															
Lab Shipping Acct: UPS # 733W87				Enfos Proposal No: D009D-0024 (WR 251660)				Phone: 916-636-3200															
Lab Bottle Order No: NA				Accounting Mode: Provision <u>X</u> OOC-BU ____ OOC-RM ____				Email Report/EDD To: lynda.lombardi@amec.com															
Other Info: 517 Injection Treatability Study				Stage: 4-Execute Activity: Spend				Invoice To: BP/ARC <u>x</u> Contractor ____															
BP/ARC EBM: Anthony Brown				Matrix No. Containers / Preservative				Requested Analyses				Report Type & QC Level											
EBM Phone: 714-228-6770												Standard <u>X</u>											
EBM Email: anthony.brown@bp.com												Full Data Package ____											
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Tot Metals-see notes (E200.7/200.8)	Dis Metals-see notes (E200.7/200.8)	Alkalinity-Total, HCO ₃ , CO ₃ , OH (SM2320B)	Sulfate (E300.0)	Chloride (E300.0)	Bromide (E300.0)	Fluoride (E300.0)	Dissolved Lithium (E200.7)	MS/MSD	HOLD	Comments	
	DR3A1209261200	9/26/12	1200	X			4	1		3		X	X	X	X	X	X	X	X	X			Dissolved metals are field filtered.
	DR3A1209261800	9/26/12	1800	X			4	1		3		X	X	X	X	X	X	X	X	X			
	DR3A1209262200	9/26/12	2200	X			4	1		3		X	X	X	X	X	X	X	X	X			Metals are: Ca, Fe, K, Na, Mg
	DR3A1209262000	9/26/12	2000	X			4	1		3		X	X	X	X	X	X	X	X	X			(E200.7); As, Cd, Co, Cr, Cu, Mn, Ni,
	517 SHAFT 465	9/26/12	1220	X			4	1		3		X	X	X	X	X	X	X	X	X			Pb, Se, Zn (E200.8)
	SILVER CREEK	9/26/12	1230	X			4	1		3		X	X	X	X	X	X	X	X	X			
	DR3A1209270000	9/27/12	0000	X			3	1		2		X	X	X	X	X	X	X	X	X			
	DR3A1209270200	9/27/12	0200	X			3	1		2		X	X	X	X	X	X	X	X	X			
Special Instructions:				Relinquished By / Affiliation				Date	Time	Accepted By / Affiliation				Date	Time								
Sampler's Name: ARRY CAZHER				Anthony C. AMEC				9/27/12	1500	[Signature]				9/29/12	1030								
Sampler's Company: AMEC																							
Shipment Method: UPS Ship Date: 9/27/12																							
Shipment Tracking No: 1Z733W872210056190																							
THIS LINE - LAB USE ONLY: Custody Seals In Place: <u>Yes</u> / No				Temp Blank: <u>Yes</u> / No				Cooler Temp on Receipt: 3.5 °C				Trip Blank: Yes <u>No</u>				MS/MSD Sample Submitted: Yes <u>No</u>							



Sample Condition Upon Receipt – ESI Tech Specs

Client Name: BP-AMEC

Project #: 60129992 / 60129994

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Optional

Tracking #: 1Z 733 W87 22 1005 6190

Pace Shipping Label Used? Yes ☒ No ☐

Proj Due Date: 10/01

Proj Name:

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☒ Bubble Bags ☐ Foam ☐ None ☐ Other ☐

Thermometer Used: T-191 / T-194

Type of Ice: Yes Blue None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 3.5

Date and initials of person examining contents: JP 9/28/12 1420

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6. <u>1 day TAT</u>
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Includes date/time/ID/analyses Matrix: <u>water</u>		13.
All containers needing preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed <u>mk</u> Lot # of added preservative
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank lot # (if purchased): <u>mk</u>		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
		16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State: <u>th</u>

Client Notification/ Resolution:

Copy COC to Client? Y / N

Field Data Required? Y / N

Person Contacted:

Date/Time:

Comments/ Resolution: Per Lynda Lombardi rush sample are 2 day TAT Amw 9/28/12

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: Start:

End: End:

Project Manager Review: Amw

Date: 9/28/12

Temp: Temp:

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the NCDENR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

November 08, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO-ARGENTINE MINE SITE
Pace Project No.: 60130058

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on September 29, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

This report revision is being issued to correct an error in the listing of certification numbers. There are no changes to any reported result.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: Pace
Florida/NELAP Certification #: E87605
Georgia Certification #: 959
Hawaii Certification #Pace
Idaho Certification #: MN00064
Illinois Certification #: 200011
Kansas Certification #: E-10167
Louisiana Certification #: 03086
Louisiana Certification #: LA080009
Maine Certification #: 2007029
Maryland Certification #: 322
Michigan DEQ Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace

Montana Certification #: MT CERT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Dakota Certification #: R-036
North Dakota Certification #: R-036A
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Tennessee Certification #: 02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia/DCLS Certification #: 002521
Virginia/VELAP Certification #: 460163
Washington Certification #: C754
West Virginia Certification #: 382
Wisconsin Certification #: 999407970

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
A2LA Certification #: 2456.01
Arkansas Certification #: 12-019-0
Illinois Certification #: 002885
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-12-3
Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60130058004	DR3A1209271000	Water	09/27/12 10:00	09/29/12 09:30
60130058008	DR3A1209271800	Water	09/27/12 18:00	09/29/12 09:30
60130058012	DR3A1209280200	Water	09/28/12 02:00	09/29/12 09:30
60130058016	517INJECT	Water	09/28/12 11:20	09/29/12 09:30
60130058017	DR3A1209271000 RE	Water	09/27/12 10:00	09/29/12 09:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60130058004	DR3A1209271000	EPA 200.7	JGP, SMW	5	PASI-K
		EPA 200.7	JGP	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	AS2	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60130058008	DR3A1209271800	EPA 200.7	JGP, SMW	5	PASI-K
		EPA 200.7	JGP	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	AS2	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60130058012	DR3A1209280200	EPA 200.7	JGP	5	PASI-K
		EPA 200.7	JGP	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	AS2	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60130058016	517INJECT	EPA 200.7	JGP, SMW	5	PASI-K
		EPA 200.7	JGP	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	RJS	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60130058017	DR3A1209271000 RE	EPA 200.7	JGP	1	PASI-K

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: November 08, 2012

General Information:

4 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19709

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60129725003,60129828001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1070683)
 - Sodium
- MSD (Lab ID: 1070684)
 - Calcium
 - Sodium

Additional Comments:

Analyte Comments:

QC Batch: MPRP/19709

B: Analyte was detected in the associated method blank.

- 517INJECT (Lab ID: 60130058016)
 - Calcium
 - Magnesium
- DR3A1209271000 (Lab ID: 60130058004)
 - Calcium
 - Magnesium

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: November 08, 2012

Analyte Comments:

QC Batch: MPRP/19709

B: Analyte was detected in the associated method blank.

- DR3A1209271800 (Lab ID: 60130058008)
 - Calcium
 - Magnesium
- DR3A1209280200 (Lab ID: 60130058012)
 - Calcium
 - Magnesium

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- 517INJECT (Lab ID: 60130058016)
 - Iron

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: November 08, 2012

General Information:

5 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/19707

B: Analyte was detected in the associated method blank.

- 517INJECT (Lab ID: 60130058016)
 - Potassium, Dissolved
 - Sodium, Dissolved
- DR3A1209271000 (Lab ID: 60130058004)
 - Potassium, Dissolved
 - Sodium, Dissolved
- DR3A1209271800 (Lab ID: 60130058008)
 - Potassium, Dissolved
 - Sodium, Dissolved
- DR3A1209280200 (Lab ID: 60130058012)
 - Sodium, Dissolved

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- 517INJECT (Lab ID: 60130058016)
 - Iron, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 08, 2012

General Information:

4 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19710

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60129936001, 60129992002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1070688)
 - Manganese
 - Zinc
- MSD (Lab ID: 1070689)
 - Manganese
 - Zinc

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 08, 2012

Analyte Comments:

QC Batch: MPRP/19710

B: Analyte was detected in the associated method blank.

- 517INJECT (Lab ID: 60130058016)
 - Manganese
 - Lead
 - Zinc
- DR3A1209271000 (Lab ID: 60130058004)
 - Manganese
 - Lead
 - Zinc
- DR3A1209271800 (Lab ID: 60130058008)
 - Manganese
 - Lead
 - Zinc
- DR3A1209280200 (Lab ID: 60130058012)
 - Manganese
 - Lead
 - Zinc

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- 517INJECT (Lab ID: 60130058016)
 - Chromium
 - Selenium

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: November 08, 2012

General Information:

4 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19708

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60129992001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1070660)
 - Manganese, Dissolved
 - Zinc, Dissolved
- MSD (Lab ID: 1070661)
 - Manganese, Dissolved
 - Zinc, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: November 08, 2012

Analyte Comments:

QC Batch: MPRP/19708

B: Analyte was detected in the associated method blank.

- 517INJECT (Lab ID: 60130058016)
 - Copper, Dissolved
 - Manganese, Dissolved
 - Zinc, Dissolved
- DR3A1209271000 (Lab ID: 60130058004)
 - Copper, Dissolved
 - Manganese, Dissolved
 - Zinc, Dissolved
- DR3A1209271800 (Lab ID: 60130058008)
 - Copper, Dissolved
 - Manganese, Dissolved
 - Zinc, Dissolved
- DR3A1209280200 (Lab ID: 60130058012)
 - Copper, Dissolved
 - Manganese, Dissolved
 - Zinc, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: November 08, 2012

General Information:

4 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: November 08, 2012

General Information:

4 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: WETA/21839

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60129447001,60129750001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1070515)
- Bromide

Additional Comments:

Analyte Comments:

QC Batch: WETA/21839

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- 517INJECT (Lab ID: 60130058016)
- Fluoride

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

Sample: DR3A1209271000 Lab ID: 60130058004 Collected: 09/27/12 10:00 Received: 09/29/12 09:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	233000	ug/L	100	35.8	1	10/01/12 10:30	10/03/12 12:20	7440-70-2	B
Iron	3690	ug/L	50.0	17.2	1	10/01/12 10:30	10/03/12 12:20	7439-89-6	
Magnesium	19000	ug/L	50.0	17.2	1	10/01/12 10:30	10/03/12 12:20	7439-95-4	B
Potassium	1660	ug/L	1000	128	2	10/04/12 08:00	10/04/12 13:44	7440-09-7	
Sodium	11100	ug/L	500	40.1	1	10/01/12 10:30	10/03/12 12:20	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	230000	ug/L	100	35.8	1	10/01/12 10:30	10/03/12 12:48	7440-70-2	
Iron, Dissolved	263	ug/L	50.0	17.2	1	10/01/12 10:30	10/03/12 12:48	7439-89-6	
Magnesium, Dissolved	19000	ug/L	50.0	17.2	1	10/01/12 10:30	10/03/12 12:48	7439-95-4	
Potassium, Dissolved	1750	ug/L	500	64.1	1	10/01/12 10:30	10/03/12 12:48	7440-09-7	B,D9
Sodium, Dissolved	11100	ug/L	500	40.1	1	10/01/12 10:30	10/03/12 12:48	7440-23-5	B
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.42J	ug/L	1.0	0.14	1	10/01/12 10:45	10/04/12 17:54	7440-38-2	
Cadmium	23.8	ug/L	0.50	0.097	1	10/01/12 10:45	10/04/12 17:54	7440-43-9	
Chromium	0.41J	ug/L	1.0	0.11	1	10/01/12 10:45	10/04/12 17:54	7440-47-3	
Cobalt	3.3	ug/L	1.0	0.048	1	10/01/12 10:45	10/04/12 17:54	7440-48-4	
Copper	46.7	ug/L	1.0	0.45	1	10/01/12 10:45	10/04/12 17:54	7440-50-8	
Lead	1.9	ug/L	1.0	0.051	1	10/01/12 10:45	10/04/12 17:54	7439-92-1	B
Manganese	2300	ug/L	1.0	0.23	1	10/01/12 10:45	10/04/12 17:54	7439-96-5	B
Nickel	5.0	ug/L	1.0	0.35	1	10/01/12 10:45	10/04/12 17:54	7440-02-0	
Selenium	ND	ug/L	1.0	0.35	1	10/01/12 10:45	10/07/12 13:34	7782-49-2	
Zinc	4610	ug/L	10.0	1.6	1	10/01/12 10:45	10/04/12 17:54	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	118	ug/L	2.5	0.56	5	10/08/12 11:42	10/12/12 21:24	7439-93-2	
Arsenic, Dissolved	0.26J	ug/L	1.0	0.14	1	10/01/12 10:30	10/02/12 13:59	7440-38-2	
Cadmium, Dissolved	20.7	ug/L	0.50	0.097	1	10/01/12 10:30	10/02/12 13:59	7440-43-9	
Chromium, Dissolved	0.23J	ug/L	1.0	0.11	1	10/01/12 10:30	10/04/12 13:16	7440-47-3	
Cobalt, Dissolved	2.7	ug/L	1.0	0.048	1	10/01/12 10:30	10/04/12 13:16	7440-48-4	
Copper, Dissolved	10.5	ug/L	1.0	0.45	1	10/01/12 10:30	10/04/12 13:16	7440-50-8	B
Lead, Dissolved	ND	ug/L	1.0	0.051	1	10/01/12 10:30	10/02/12 13:59	7439-92-1	
Manganese, Dissolved	2110	ug/L	1.0	0.23	1	10/01/12 10:30	10/02/12 13:59	7439-96-5	B
Nickel, Dissolved	4.0	ug/L	1.0	0.35	1	10/01/12 10:30	10/04/12 13:16	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.35	1	10/01/12 10:30	10/02/12 13:59	7782-49-2	
Zinc, Dissolved	3980	ug/L	10.0	1.6	1	10/01/12 10:30	10/02/12 13:59	7440-66-6	B
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	88.4	mg/L	20.0	1.2	1		10/01/12 09:35		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/01/12 09:35		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/01/12 09:35		
Alkalinity, Total as CaCO3	88.4	mg/L	20.0	1.2	1		10/01/12 09:35		

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

Sample: DR3A1209271000		Lab ID: 60130058004		Collected: 09/27/12 10:00		Received: 09/29/12 09:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.15J	mg/L	1.0	0.078	1		09/29/12 20:23	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		09/29/12 20:23	16887-00-6	
Fluoride	2.3	mg/L	0.20	0.011	1		09/29/12 20:23	16984-48-8	
Sulfate	634	mg/L	100	12.0	100		09/29/12 20:39	14808-79-8	

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

Sample: DR3A1209271800 Lab ID: 60130058008 Collected: 09/27/12 18:00 Received: 09/29/12 09:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	233000	ug/L	100	35.8	1	10/01/12 10:30	10/03/12 12:24	7440-70-2	B
Iron	3610	ug/L	50.0	17.2	1	10/01/12 10:30	10/03/12 12:24	7439-89-6	
Magnesium	19200	ug/L	50.0	17.2	1	10/01/12 10:30	10/03/12 12:24	7439-95-4	B
Potassium	1570	ug/L	1000	128	2	10/04/12 08:00	10/04/12 13:57	7440-09-7	
Sodium	11300	ug/L	500	40.1	1	10/01/12 10:30	10/03/12 12:24	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	235000	ug/L	100	35.8	1	10/01/12 10:30	10/03/12 13:01	7440-70-2	D9
Iron, Dissolved	118	ug/L	50.0	17.2	1	10/01/12 10:30	10/03/12 13:01	7439-89-6	
Magnesium, Dissolved	19300	ug/L	50.0	17.2	1	10/01/12 10:30	10/03/12 13:01	7439-95-4	D9
Potassium, Dissolved	1800	ug/L	500	64.1	1	10/01/12 10:30	10/03/12 13:01	7440-09-7	B,D9
Sodium, Dissolved	11300	ug/L	500	40.1	1	10/01/12 10:30	10/03/12 13:01	7440-23-5	B
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.32J	ug/L	1.0	0.14	1	10/01/12 10:45	10/04/12 18:06	7440-38-2	
Cadmium	23.2	ug/L	0.50	0.097	1	10/01/12 10:45	10/04/12 18:06	7440-43-9	
Chromium	0.48J	ug/L	1.0	0.11	1	10/01/12 10:45	10/04/12 18:06	7440-47-3	
Cobalt	3.3	ug/L	1.0	0.048	1	10/01/12 10:45	10/04/12 18:06	7440-48-4	
Copper	43.7	ug/L	1.0	0.45	1	10/01/12 10:45	10/04/12 18:06	7440-50-8	
Lead	2.4	ug/L	1.0	0.051	1	10/01/12 10:45	10/04/12 18:06	7439-92-1	B
Manganese	2240	ug/L	1.0	0.23	1	10/01/12 10:45	10/04/12 18:06	7439-96-5	B
Nickel	5.2	ug/L	1.0	0.35	1	10/01/12 10:45	10/04/12 18:06	7440-02-0	
Selenium	ND	ug/L	1.0	0.35	1	10/01/12 10:45	10/07/12 13:38	7782-49-2	
Zinc	4470	ug/L	10.0	1.6	1	10/01/12 10:45	10/04/12 18:06	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	23.0	ug/L	0.50	0.11	1	10/08/12 11:42	10/12/12 21:30	7439-93-2	
Arsenic, Dissolved	ND	ug/L	1.0	0.14	1	10/01/12 10:30	10/02/12 14:12	7440-38-2	
Cadmium, Dissolved	20.6	ug/L	0.50	0.097	1	10/01/12 10:30	10/02/12 14:12	7440-43-9	
Chromium, Dissolved	0.17J	ug/L	1.0	0.11	1	10/01/12 10:30	10/04/12 13:20	7440-47-3	
Cobalt, Dissolved	2.7	ug/L	1.0	0.048	1	10/01/12 10:30	10/04/12 13:20	7440-48-4	
Copper, Dissolved	3.9	ug/L	1.0	0.45	1	10/01/12 10:30	10/04/12 13:20	7440-50-8	B
Lead, Dissolved	ND	ug/L	1.0	0.051	1	10/01/12 10:30	10/02/12 14:12	7439-92-1	
Manganese, Dissolved	2130	ug/L	1.0	0.23	1	10/01/12 10:30	10/02/12 14:12	7439-96-5	B
Nickel, Dissolved	4.3	ug/L	1.0	0.35	1	10/01/12 10:30	10/04/12 13:20	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.35	1	10/01/12 10:30	10/02/12 14:12	7782-49-2	
Zinc, Dissolved	3940	ug/L	10.0	1.6	1	10/01/12 10:30	10/02/12 14:12	7440-66-6	B
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	89.9	mg/L	20.0	1.2	1		10/01/12 09:43		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/01/12 09:43		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/01/12 09:43		
Alkalinity, Total as CaCO3	89.9	mg/L	20.0	1.2	1		10/01/12 09:43		

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

Sample: DR3A1209271800		Lab ID: 60130058008		Collected: 09/27/12 18:00		Received: 09/29/12 09:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.14J	mg/L	1.0	0.078	1		09/29/12 21:57	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		09/29/12 21:57	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		09/29/12 21:57	16984-48-8	
Sulfate	616	mg/L	100	12.0	100		09/29/12 22:44	14808-79-8	

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

Sample: DR3A1209280200 Lab ID: 60130058012 Collected: 09/28/12 02:00 Received: 09/29/12 09:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	233000	ug/L	100	35.8	1	10/01/12 10:30	10/03/12 12:27	7440-70-2	B
Iron	3650	ug/L	50.0	17.2	1	10/01/12 10:30	10/03/12 12:27	7439-89-6	
Magnesium	19100	ug/L	50.0	17.2	1	10/01/12 10:30	10/03/12 12:27	7439-95-4	B
Potassium	1760	ug/L	500	64.1	1	10/11/12 09:00	10/11/12 15:54	7440-09-7	
Sodium	11200	ug/L	500	40.1	1	10/01/12 10:30	10/03/12 12:27	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	231000	ug/L	100	35.8	1	10/01/12 10:30	10/03/12 13:05	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	17.2	1	10/01/12 10:30	10/03/12 13:05	7439-89-6	
Magnesium, Dissolved	19400	ug/L	50.0	17.2	1	10/01/12 10:30	10/03/12 13:05	7439-95-4	D9
Potassium, Dissolved	1810	ug/L	500	64.1	1	10/11/12 09:00	10/11/12 15:54	7440-09-7	D9
Sodium, Dissolved	11000	ug/L	500	40.1	1	10/01/12 10:30	10/03/12 13:05	7440-23-5	B
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.46J	ug/L	1.0	0.14	1	10/01/12 10:45	10/04/12 18:10	7440-38-2	
Cadmium	22.8	ug/L	0.50	0.097	1	10/01/12 10:45	10/04/12 18:10	7440-43-9	
Chromium	0.45J	ug/L	1.0	0.11	1	10/01/12 10:45	10/04/12 18:10	7440-47-3	
Cobalt	3.1	ug/L	1.0	0.048	1	10/01/12 10:45	10/04/12 18:10	7440-48-4	
Copper	43.2	ug/L	1.0	0.45	1	10/01/12 10:45	10/04/12 18:10	7440-50-8	
Lead	1.9	ug/L	1.0	0.051	1	10/01/12 10:45	10/04/12 18:10	7439-92-1	B
Manganese	2220	ug/L	1.0	0.23	1	10/01/12 10:45	10/04/12 18:10	7439-96-5	B
Nickel	4.8	ug/L	1.0	0.35	1	10/01/12 10:45	10/04/12 18:10	7440-02-0	
Selenium	ND	ug/L	1.0	0.35	1	10/01/12 10:45	10/07/12 13:42	7782-49-2	
Zinc	4360	ug/L	10.0	1.6	1	10/01/12 10:45	10/04/12 18:10	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	24.7	ug/L	2.5	0.56	5	10/08/12 11:42	10/13/12 13:53	7439-93-2	
Arsenic, Dissolved	0.21J	ug/L	1.0	0.14	1	10/01/12 10:30	10/02/12 14:16	7440-38-2	
Cadmium, Dissolved	20.4	ug/L	0.50	0.097	1	10/01/12 10:30	10/02/12 14:16	7440-43-9	
Chromium, Dissolved	0.16J	ug/L	1.0	0.11	1	10/01/12 10:30	10/04/12 13:24	7440-47-3	
Cobalt, Dissolved	2.6	ug/L	1.0	0.048	1	10/01/12 10:30	10/04/12 13:24	7440-48-4	
Copper, Dissolved	3.3	ug/L	1.0	0.45	1	10/01/12 10:30	10/04/12 13:24	7440-50-8	B
Lead, Dissolved	ND	ug/L	1.0	0.051	1	10/01/12 10:30	10/02/12 14:16	7439-92-1	
Manganese, Dissolved	2110	ug/L	1.0	0.23	1	10/01/12 10:30	10/02/12 14:16	7439-96-5	B
Nickel, Dissolved	4.1	ug/L	1.0	0.35	1	10/01/12 10:30	10/04/12 13:24	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.35	1	10/01/12 10:30	10/02/12 14:16	7782-49-2	
Zinc, Dissolved	3950	ug/L	10.0	1.6	1	10/01/12 10:30	10/02/12 14:16	7440-66-6	B
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	89.4	mg/L	20.0	1.2	1		10/01/12 09:46		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/01/12 09:46		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/01/12 09:46		
Alkalinity, Total as CaCO ₃	89.4	mg/L	20.0	1.2	1		10/01/12 09:46		

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

Sample: DR3A1209280200		Lab ID: 60130058012		Collected: 09/28/12 02:00		Received: 09/29/12 09:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.078	1		09/29/12 23:00	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		09/29/12 23:00	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		09/29/12 23:00	16984-48-8	
Sulfate	648	mg/L	100	12.0	100		09/29/12 23:16	14808-79-8	

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

Sample: 517INJECT Lab ID: 60130058016 Collected: 09/28/12 11:20 Received: 09/29/12 09:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	21400	ug/L	5000	1790	50	10/01/12 10:30	10/03/12 13:43	7440-70-2	B
Iron	ND	ug/L	50000	17200	1000	10/01/12 10:30	10/03/12 15:56	7439-89-6	D3
Magnesium	4420	ug/L	2500	860	50	10/01/12 10:30	10/03/12 13:43	7439-95-4	B
Potassium	173000000	ug/L	1000000	128000	2000	10/04/12 08:00	10/04/12 14:04	7440-09-7	
Sodium	371000	ug/L	25000	2000	50	10/01/12 10:30	10/03/12 13:43	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	14500	ug/L	5000	1790	50	10/01/12 10:30	10/03/12 13:46	7440-70-2	
Iron, Dissolved	ND	ug/L	50000	17200	1000	10/01/12 10:30	10/03/12 15:58	7439-89-6	D3
Magnesium, Dissolved	5440	ug/L	2500	860	50	10/01/12 10:30	10/03/12 13:46	7439-95-4	D9
Potassium, Dissolved	177000000	ug/L	500000	64100	1000	10/01/12 10:30	10/03/12 15:58	7440-09-7	B,D9
Sodium, Dissolved	453000	ug/L	25000	2000	50	10/01/12 10:30	10/03/12 13:46	7440-23-5	B,D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	35.6J	ug/L	100	14.0	100	10/01/12 10:45	10/04/12 18:14	7440-38-2	
Cadmium	ND	ug/L	50.0	9.7	100	10/01/12 10:45	10/04/12 18:14	7440-43-9	
Chromium	49.9J	ug/L	100	11.0	100	10/01/12 10:45	10/04/12 18:14	7440-47-3	D3
Cobalt	ND	ug/L	100	4.8	100	10/01/12 10:45	10/04/12 18:14	7440-48-4	
Copper	58.8J	ug/L	100	45.0	100	10/01/12 10:45	10/04/12 18:14	7440-50-8	
Lead	107	ug/L	100	5.1	100	10/01/12 10:45	10/04/12 18:14	7439-92-1	B
Manganese	69.6J	ug/L	100	23.0	100	10/01/12 10:45	10/04/12 18:14	7439-96-5	B
Nickel	ND	ug/L	100	35.0	100	10/01/12 10:45	10/04/12 18:14	7440-02-0	
Selenium	ND	ug/L	100	35.0	100	10/01/12 10:45	10/07/12 13:46	7782-49-2	D3
Zinc	605J	ug/L	1000	160	100	10/01/12 10:45	10/04/12 18:14	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	426000	ug/L	1000	222	2000	10/08/12 11:42	10/14/12 14:56	7439-93-2	
Arsenic, Dissolved	29.7	ug/L	10.0	1.4	10	10/01/12 10:30	10/02/12 14:35	7440-38-2	
Cadmium, Dissolved	16.3J	ug/L	50.0	9.7	100	10/01/12 10:30	10/04/12 13:28	7440-43-9	
Chromium, Dissolved	33.1J	ug/L	100	11.0	100	10/01/12 10:30	10/04/12 13:28	7440-47-3	
Cobalt, Dissolved	ND	ug/L	100	4.8	100	10/01/12 10:30	10/04/12 13:28	7440-48-4	
Copper, Dissolved	80.3J	ug/L	100	45.0	100	10/01/12 10:30	10/04/12 13:28	7440-50-8	B
Lead, Dissolved	68.9	ug/L	10.0	0.51	10	10/01/12 10:30	10/02/12 14:35	7439-92-1	
Manganese, Dissolved	76.7	ug/L	10.0	2.3	10	10/01/12 10:30	10/02/12 14:35	7439-96-5	B
Nickel, Dissolved	ND	ug/L	100	35.0	100	10/01/12 10:30	10/04/12 13:28	7440-02-0	
Selenium, Dissolved	14.0	ug/L	10.0	3.5	10	10/01/12 10:30	10/02/12 14:35	7782-49-2	
Zinc, Dissolved	293	ug/L	100	16.0	10	10/01/12 10:30	10/02/12 14:35	7440-66-6	B
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	ND	mg/L	12000	720	1		10/02/12 12:46		
Alkalinity, Carbonate (CaCO3)	271000	mg/L	12000	720	1		10/02/12 12:46		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	12000	720	1		10/02/12 12:46		
Alkalinity, Total as CaCO3	272000	mg/L	12000	720	1		10/02/12 12:46		

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

Sample: 517INJECT		Lab ID: 60130058016		Collected: 09/28/12 11:20		Received: 09/29/12 09:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.059	1		10/01/12 14:02	24959-67-9	
Chloride	3150	mg/L	200	100	200		10/01/12 14:37	16887-00-6	
Fluoride	ND	mg/L	2.0	0.27	10		10/01/12 14:20	16984-48-8	D3
Sulfate	ND	mg/L	1.0	0.34	1		10/01/12 14:02	14808-79-8	

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

Sample: DR3A1209271000 RE		Lab ID: 60130058017		Collected: 09/27/12 10:00		Received: 09/29/12 09:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Dissolved									
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Lithium, Dissolved	29.0	ug/L	10.0	3.7	1	11/05/12 11:00	11/06/12 15:26	7439-93-2	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

QC Batch:	ICPM/35515	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET Dissolved
Associated Lab Samples:	60130058004, 60130058008, 60130058012, 60130058016		

METHOD BLANK:	1301168	Matrix:	Water
Associated Lab Samples:	60130058004, 60130058008, 60130058012, 60130058016		

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lithium, Dissolved	ug/L	ND	0.50	10/12/12 20:30	

LABORATORY CONTROL SAMPLE: 1301169

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lithium, Dissolved	ug/L	80	83.9	105	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1304324 1304325

Parameter	Units	60130058008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lithium, Dissolved	ug/L	23.0	80	80	108	109	106	108	70-130	1	20	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

QC Batch: MPRP/19709 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60130058004, 60130058008, 60130058012, 60130058016

METHOD BLANK: 1070681 Matrix: Water
Associated Lab Samples: 60130058004, 60130058008, 60130058012, 60130058016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	ug/L	38.1J	100	10/02/12 14:47	
Iron	ug/L	ND	50.0	10/02/12 14:47	
Magnesium	ug/L	22.8J	50.0	10/02/12 14:47	
Sodium	ug/L	ND	500	10/02/12 14:47	

LABORATORY CONTROL SAMPLE: 1070682

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	9700	97	85-115	
Iron	ug/L	10000	9800	98	85-115	
Magnesium	ug/L	10000	9930	99	85-115	
Sodium	ug/L	10000	10600	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1070683 1070684

Parameter	Units	60129725003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	108000	10000	10000	117000	112000	90	40	70-130	4	9 M1	
Iron	ug/L	787	10000	10000	10400	9940	96	92	70-130	4	10	
Magnesium	ug/L	34300	10000	10000	43500	41900	91	76	70-130	4	9	
Sodium	ug/L	712000	10000	10000	658000	630000	-539	-823	70-130	4	8 M1	

MATRIX SPIKE SAMPLE: 1070685

Parameter	Units	60129828001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L			14200			
Iron	ug/L			9580			
Magnesium	ug/L			9360			
Sodium	ug/L			81300			

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

QC Batch: MPRP/19788

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60130058004, 60130058008, 60130058016

METHOD BLANK: 1072666

Matrix: Water

Associated Lab Samples: 60130058004, 60130058008, 60130058016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Potassium	ug/L	ND	500	10/04/12 13:37	

LABORATORY CONTROL SAMPLE: 1072667

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Potassium	ug/L	10000	10800	108	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1072668

1072669

Parameter	Units	60130058004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Potassium	ug/L	1660	10000	10000	12800	12600	111	109	70-130	2	7	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

QC Batch: MPRP/19925

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60130058012

METHOD BLANK: 1078005

Matrix: Water

Associated Lab Samples: 60130058012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Potassium	ug/L	ND	500	10/11/12 15:50	

LABORATORY CONTROL SAMPLE: 1078006

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Potassium	ug/L	10000	10100	101	85-115	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

QC Batch:	MPRP/19707	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Dissolved
Associated Lab Samples:	60130058004, 60130058008, 60130058012, 60130058016		

METHOD BLANK: 1070650 Matrix: Water

Associated Lab Samples: 60130058004, 60130058008, 60130058012, 60130058016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	10/03/12 12:38	
Iron, Dissolved	ug/L	ND	50.0	10/03/12 12:38	
Magnesium, Dissolved	ug/L	ND	50.0	10/03/12 12:38	
Potassium, Dissolved	ug/L	84.3J	500	10/03/12 12:38	
Sodium, Dissolved	ug/L	42.8J	500	10/03/12 12:38	

LABORATORY CONTROL SAMPLE: 1070651

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9580	96	85-115	
Iron, Dissolved	ug/L	10000	9550	95	85-115	
Magnesium, Dissolved	ug/L	10000	9560	96	85-115	
Potassium, Dissolved	ug/L	10000	9860	99	85-115	
Sodium, Dissolved	ug/L	10000	10100	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1070652 1070653

Parameter	Units	60130058004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium, Dissolved	ug/L	230000	10000	10000	238000	238000	85	80	70-130	0	9	
Iron, Dissolved	ug/L	263	10000	10000	9930	9780	97	95	70-130	1	10	
Magnesium, Dissolved	ug/L	19000	10000	10000	28100	28000	92	91	70-130	0	9	
Potassium, Dissolved	ug/L	1750	10000	10000	11900	11900	102	102	70-130	0	7	
Sodium, Dissolved	ug/L	11100	10000	10000	21500	21300	104	102	70-130	1	8	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

QC Batch: MPRP/19924

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60130058012

METHOD BLANK: 1077983

Matrix: Water

Associated Lab Samples: 60130058012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Potassium, Dissolved	ug/L	ND	500	10/11/12 15:50	

LABORATORY CONTROL SAMPLE: 1077984

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Potassium, Dissolved	ug/L	10000	10100	101	85-115	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

QC Batch: MPRP/20319

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60130058017

METHOD BLANK: 1093225

Matrix: Water

Associated Lab Samples: 60130058017

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lithium, Dissolved	ug/L	ND	10.0	11/06/12 15:18	

LABORATORY CONTROL SAMPLE: 1093226

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lithium, Dissolved	ug/L	1000	1040	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1093227 1093228

Parameter	Units	60132532002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lithium, Dissolved	ug/L	285	1000	1000	1240	1250	95	96	70-130	1	20	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

QC Batch: MPRP/19710 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60130058004, 60130058008, 60130058012, 60130058016

METHOD BLANK: 1070686 Matrix: Water

Associated Lab Samples: 60130058004, 60130058008, 60130058012, 60130058016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	10/04/12 17:17	
Cadmium	ug/L	ND	0.50	10/04/12 17:17	
Chromium	ug/L	ND	1.0	10/04/12 17:17	
Cobalt	ug/L	ND	1.0	10/04/12 17:17	
Copper	ug/L	ND	1.0	10/04/12 17:17	
Lead	ug/L	0.22J	1.0	10/04/12 17:17	
Manganese	ug/L	0.46J	1.0	10/04/12 17:17	
Nickel	ug/L	ND	1.0	10/04/12 17:17	
Selenium	ug/L	ND	1.0	10/07/12 12:41	
Zinc	ug/L	4.9J	10.0	10/04/12 17:17	

LABORATORY CONTROL SAMPLE: 1070687

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	44.3	111	85-115	
Cadmium	ug/L	40	44.0	110	85-115	
Chromium	ug/L	40	45.1	113	85-115	
Cobalt	ug/L	40	44.3	111	85-115	
Copper	ug/L	40	43.8	109	85-115	
Lead	ug/L	40	44.1	110	85-115	
Manganese	ug/L	40	45.8	114	85-115	
Nickel	ug/L	40	45.5	114	85-115	
Selenium	ug/L	40	41.1	103	85-115	
Zinc	ug/L	100	108	108	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1070688 1070689

Parameter	Units	60129992002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	0.41J	40	40	41.5	43.4	103	108	70-130	4	20	
Cadmium	ug/L	23.7	40	40	64.5	66.8	102	108	70-130	3	20	
Chromium	ug/L	0.32J	40	40	41.1	43.8	102	109	70-130	6	20	
Cobalt	ug/L	3.4	40	40	43.5	46.0	100	106	70-130	6	20	
Copper	ug/L	39.5	40	40	76.4	80.9	92	103	70-130	6	20	
Lead	ug/L	1.6	40	40	41.9	44.4	101	107	70-130	6	20	
Manganese	ug/L	2330	40	40	2230	2350	-235	50	70-130	5	20 M1	
Nickel	ug/L	5.3	40	40	45.3	47.5	100	105	70-130	5	20	
Selenium	ug/L	ND	40	40	41.6	40.7	104	102	70-130	2	20	
Zinc	ug/L	4610	100	100	4470	4660	-140	49	70-130	4	20 M1	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

MATRIX SPIKE SAMPLE:		1070690					
Parameter	Units	60129936001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	1.3	40	43.4	105	70-130	
Cadmium	ug/L	ND	40	43.1	108	70-130	
Chromium	ug/L	ND	40	41.4	102	70-130	
Cobalt	ug/L	ND	40	40.0	99	70-130	
Copper	ug/L	1.9	40	39.9	95	70-130	
Lead	ug/L	ND	40	43.4	108	70-130	
Manganese	ug/L	83.0	40	126	106	70-130	
Nickel	ug/L	1.9	40	41.6	99	70-130	
Selenium	ug/L	ND	40	41.7	104	70-130	
Zinc	ug/L	ND	100	113	110	70-130	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

QC Batch: MPRP/19708 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60130058004, 60130058008, 60130058012, 60130058016

METHOD BLANK: 1070658 Matrix: Water
Associated Lab Samples: 60130058004, 60130058008, 60130058012, 60130058016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	10/02/12 13:23	
Cadmium, Dissolved	ug/L	ND	0.50	10/02/12 13:23	
Chromium, Dissolved	ug/L	ND	1.0	10/04/12 12:26	
Cobalt, Dissolved	ug/L	ND	1.0	10/04/12 12:26	
Copper, Dissolved	ug/L	0.55J	1.0	10/04/12 12:26	
Lead, Dissolved	ug/L	ND	1.0	10/02/12 13:23	
Manganese, Dissolved	ug/L	0.69J	1.0	10/02/12 13:23	
Nickel, Dissolved	ug/L	ND	1.0	10/04/12 12:26	
Selenium, Dissolved	ug/L	ND	1.0	10/02/12 13:23	
Zinc, Dissolved	ug/L	8.7J	10.0	10/02/12 13:23	

LABORATORY CONTROL SAMPLE: 1070659

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	40.4	101	85-115	
Cadmium, Dissolved	ug/L	40	40.1	100	85-115	
Chromium, Dissolved	ug/L	40	40.0	100	85-115	
Cobalt, Dissolved	ug/L	40	39.8	99	85-115	
Copper, Dissolved	ug/L	40	39.8	100	85-115	
Lead, Dissolved	ug/L	40	40.3	101	85-115	
Manganese, Dissolved	ug/L	40	41.9	105	85-115	
Nickel, Dissolved	ug/L	40	40.4	101	85-115	
Selenium, Dissolved	ug/L	40	40.7	102	85-115	
Zinc, Dissolved	ug/L	100	114	114	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1070660 1070661

Parameter	Units	60129992001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	0.18J	40	40	41.3	38.2	103	95	70-130	8	20	
Cadmium, Dissolved	ug/L	21.7	40	40	64.7	61.6	107	100	70-130	5	20	
Chromium, Dissolved	ug/L	0.23J	40	40	40.1	38.6	100	96	70-130	4	20	
Cobalt, Dissolved	ug/L	3.0	40	40	41.9	40.1	97	93	70-130	4	20	
Copper, Dissolved	ug/L	8.6	40	40	47.2	44.5	96	90	70-130	6	20	
Lead, Dissolved	ug/L	ND	40	40	40.8	38.7	102	97	70-130	5	20	
Manganese, Dissolved	ug/L	2110	40	40	2260	2200	380	235	70-130	3	20 M1	
Nickel, Dissolved	ug/L	3.7	40	40	43.4	42.1	99	96	70-130	3	20	
Selenium, Dissolved	ug/L	ND	40	40	39.5	37.4	99	93	70-130	6	20	
Zinc, Dissolved	ug/L	4060	100	100	4470	4270	410	209	70-130	5	20 M1	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

QC Batch: WET/37417 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60130058004, 60130058008, 60130058012

METHOD BLANK: 1070550 Matrix: Water

Associated Lab Samples: 60130058004, 60130058008, 60130058012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	10/01/12 09:26	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	10/01/12 09:26	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	10/01/12 09:26	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	10/01/12 09:26	

LABORATORY CONTROL SAMPLE: 1070551

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	490	98	90-110	

SAMPLE DUPLICATE: 1070552

Parameter	Units	60130058004 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	88.4	90.3	2	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	88.4	90.3	2	9	

SAMPLE DUPLICATE: 1070553

Parameter	Units	60129973008 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	947	951	0	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	947	951	0	9	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

QC Batch: WET/37446

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60130058016

METHOD BLANK: 1071061

Matrix: Water

Associated Lab Samples: 60130058016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	10/02/12 09:38	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	10/02/12 09:38	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	10/02/12 09:38	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	10/02/12 09:38	

LABORATORY CONTROL SAMPLE: 1071062

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	498	100	90-110	

SAMPLE DUPLICATE: 1071063

Parameter	Units	60130058016 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	271000	280000	3	24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	272000	281000	3	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	ND		9	

SAMPLE DUPLICATE: 1071064

Parameter	Units	60130126002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	43.4	43.1	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	43.4	43.1	1	9	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Project No.: 60130058

QC Batch: WETA/21834 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60130058004, 60130058008, 60130058012

METHOD BLANK: 1070241 Matrix: Water

Associated Lab Samples: 60130058004, 60130058008, 60130058012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	09/29/12 19:51	
Chloride	mg/L	ND	1.0	09/29/12 19:51	
Fluoride	mg/L	ND	0.20	09/29/12 19:51	
Sulfate	mg/L	ND	1.0	09/29/12 19:51	

LABORATORY CONTROL SAMPLE: 1070242

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.9	98	90-110	
Chloride	mg/L	5	4.6	92	90-110	
Fluoride	mg/L	2.5	2.4	97	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1070243 1070244

Parameter	Units	60130058004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	0.15J	5	5	4.6	4.6	89	90	75-119	1	10	
Chloride	mg/L	ND	5	5	5.0	5.1	99	100	64-118	1	12	
Fluoride	mg/L	2.3	2.5	2.5	4.8	4.8	102	103	75-110	0	10	
Sulfate	mg/L	634	500	500	1120	1130	98	99	61-119	0	10	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

QC Batch: WETA/21839

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60130058016

METHOD BLANK: 1070511

Matrix: Water

Associated Lab Samples: 60130058016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	10/01/12 12:53	
Sulfate	mg/L	ND	1.0	10/01/12 12:53	

LABORATORY CONTROL SAMPLE: 1070512

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.8	97	90-110	
Sulfate	mg/L	5	4.8	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1070513 1070514

Parameter	Units	60129447001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	3.4	10	10	11.5	12.1	81	87	75-119	5	10	

MATRIX SPIKE SAMPLE: 1070515

Parameter	Units	60129750001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L		4.0	5	1.9	-41	75-119 M1
Sulfate	mg/L		1.8	5	6.5	93	61-119

QUALIFIERS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

PASI-M Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130058

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60130058004	DR3A1209271000	EPA 200.7	MPRP/19709	EPA 200.7	ICP/16239
60130058004	DR3A1209271000	EPA 200.7	MPRP/19788	EPA 200.7	ICP/16294
60130058008	DR3A1209271800	EPA 200.7	MPRP/19709	EPA 200.7	ICP/16239
60130058008	DR3A1209271800	EPA 200.7	MPRP/19788	EPA 200.7	ICP/16294
60130058012	DR3A1209280200	EPA 200.7	MPRP/19709	EPA 200.7	ICP/16239
60130058012	DR3A1209280200	EPA 200.7	MPRP/19925	EPA 200.7	ICP/16359
60130058016	517INJECT	EPA 200.7	MPRP/19709	EPA 200.7	ICP/16239
60130058016	517INJECT	EPA 200.7	MPRP/19788	EPA 200.7	ICP/16294
60130058004	DR3A1209271000	EPA 200.7	MPRP/19707	EPA 200.7	ICP/16238
60130058008	DR3A1209271800	EPA 200.7	MPRP/19707	EPA 200.7	ICP/16238
60130058012	DR3A1209280200	EPA 200.7	MPRP/19707	EPA 200.7	ICP/16238
60130058012	DR3A1209280200	EPA 200.7	MPRP/19924	EPA 200.7	ICP/16358
60130058016	517INJECT	EPA 200.7	MPRP/19707	EPA 200.7	ICP/16238
60130058017	DR3A1209271000 RE	EPA 200.7	MPRP/20319	EPA 200.7	ICP/16596
60130058004	DR3A1209271000	EPA 200.8	MPRP/19710	EPA 200.8	ICPM/1669
60130058008	DR3A1209271800	EPA 200.8	MPRP/19710	EPA 200.8	ICPM/1669
60130058012	DR3A1209280200	EPA 200.8	MPRP/19710	EPA 200.8	ICPM/1669
60130058016	517INJECT	EPA 200.8	MPRP/19710	EPA 200.8	ICPM/1669
60130058004	DR3A1209271000	EPA 200.8	ICPM/35515	EPA 200.8	ICPM/14074
60130058004	DR3A1209271000	EPA 200.8	MPRP/19708	EPA 200.8	ICPM/1668
60130058008	DR3A1209271800	EPA 200.8	ICPM/35515	EPA 200.8	ICPM/14074
60130058008	DR3A1209271800	EPA 200.8	MPRP/19708	EPA 200.8	ICPM/1668
60130058012	DR3A1209280200	EPA 200.8	ICPM/35515	EPA 200.8	ICPM/14074
60130058012	DR3A1209280200	EPA 200.8	MPRP/19708	EPA 200.8	ICPM/1668
60130058016	517INJECT	EPA 200.8	ICPM/35515	EPA 200.8	ICPM/14074
60130058016	517INJECT	EPA 200.8	MPRP/19708	EPA 200.8	ICPM/1668
60130058004	DR3A1209271000	SM 2320B	WET/37417		
60130058008	DR3A1209271800	SM 2320B	WET/37417		
60130058012	DR3A1209280200	SM 2320B	WET/37417		
60130058016	517INJECT	SM 2320B	WET/37446		
60130058004	DR3A1209271000	EPA 300.0	WETA/21834		
60130058008	DR3A1209271800	EPA 300.0	WETA/21834		
60130058012	DR3A1209280200	EPA 300.0	WETA/21834		
60130058016	517INJECT	EPA 300.0	WETA/21839		

October 11, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60130225

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on October 02, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 09, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: Pace
Florida/NELAP Certification #: E87605
Georgia Certification #: 959
Hawaii Certification #Pace
Idaho Certification #: MN00064
Illinois Certification #: 200011
Kansas Certification #: E-10167
Louisiana Certification #: 03086
Louisiana Certification #: LA080009
Maine Certification #: 2007029
Maryland Certification #: 322
Michigan DEQ Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace

Montana Certification #: MT CERT0092
Nebraska Certification #: Pace
Nevada Certification #: MN_00064
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Dakota Certification #: R-036
North Dakota Certification #: R-036A
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Tennessee Certification #: 02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia/DCLS Certification #: 002521
Virginia/VELAP Certification #: 460163
Washington Certification #: C754
West Virginia Certification #: 382
Wisconsin Certification #: 999407970

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
A2LA Certification #: 2456.01
Arkansas Certification #: 12-019-0
Illinois Certification #: 002885
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-12-3
Utah Certification #: KS000212012-2

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SAMPLE SUMMARY

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60130225001	DR3A1209281000	Water	09/28/12 10:00	10/02/12 10:25
60130225005	DR3A1209281800	Water	09/28/12 18:00	10/02/12 10:25
60130226001	DR3A1209290200	Water	09/29/12 02:00	10/02/12 10:25
60130226005	DR3A1209291000	Water	09/29/12 10:00	10/02/12 10:25
60130227001	DR3A1209291800	Water	09/29/12 18:00	10/02/12 10:25
60130227005	DR3A1209300200	Water	09/30/12 02:00	10/02/12 10:25
60130227009	DR3A1209301200	Water	09/30/12 12:00	10/02/12 10:25
60130227012	DR3A1209301800	Water	09/30/12 18:00	10/02/12 10:25
60130227016	DR3A1210010200	Water	10/01/12 02:00	10/02/12 10:25

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60130225001	DR3A1209281000	EPA 200.7	SMW	5	PASI-K
		EPA 200.7	SMW	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	RJS	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60130225005	DR3A1209281800	EPA 200.7	SMW	5	PASI-K
		EPA 200.7	SMW	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	RJS	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60130226001	DR3A1209290200	EPA 200.7	SMW	5	PASI-K
		EPA 200.7	SMW	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	RJS	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60130226005	DR3A1209291000	EPA 200.7	SMW	5	PASI-K
		EPA 200.7	SMW	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	RJS	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60130227001	DR3A1209291800	EPA 200.7	SMW	5	PASI-K
		EPA 200.7	SMW	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	RJS	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60130227005	DR3A1209300200	EPA 200.7	SMW	5	PASI-K
		EPA 200.7	SMW	5	PASI-K
		EPA 200.7	SMW	5	PASI-K

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60130227009	DR3A1209301200	EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	RJS	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
		EPA 200.7	SMW	5	PASI-K
		EPA 200.7	SMW	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	RJS	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60130227012	DR3A1209301800	EPA 200.7	SMW	5	PASI-K
		EPA 200.7	SMW	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	RJS	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
		EPA 200.7	SMW	5	PASI-K
		EPA 200.7	SMW	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	RJS	1	PASI-M
60130227016	DR3A1210010200	SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
		EPA 200.7	SMW	5	PASI-K
		EPA 200.7	SMW	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	RJS	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
		EPA 200.7	SMW	5	PASI-K
		EPA 200.7	SMW	5	PASI-K
		EPA 200.8	SMW	10	PASI-K

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60130225

Method: EPA 200.7
Description: 200.7 Metals, Total
Client: BP AMEC
Date: October 11, 2012

General Information:

9 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19753

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60129844002,60130227005

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1071772)
 - Sodium
- MS (Lab ID: 1071774)
 - Calcium
- MSD (Lab ID: 1071773)
 - Sodium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: October 11, 2012

General Information:

9 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19751

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60130225001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1071756)
 - Calcium, Dissolved
- MSD (Lab ID: 1071757)
 - Calcium, Dissolved

Additional Comments:

Analyte Comments:

QC Batch: MPRP/19751

B: Analyte was detected in the associated method blank.

- DR3A1209281000 (Lab ID: 60130225001)
 - Sodium, Dissolved
- DR3A1209281800 (Lab ID: 60130225005)
 - Sodium, Dissolved
- DR3A1209290200 (Lab ID: 60130226001)
 - Sodium, Dissolved

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: October 11, 2012

Analyte Comments:

QC Batch: MPRP/19751

B: Analyte was detected in the associated method blank.

- DR3A1209291000 (Lab ID: 60130226005)
 - Sodium, Dissolved
- DR3A1209291800 (Lab ID: 60130227001)
 - Sodium, Dissolved
- DR3A1209300200 (Lab ID: 60130227005)
 - Sodium, Dissolved
- DR3A1209301200 (Lab ID: 60130227009)
 - Sodium, Dissolved
- DR3A1209301800 (Lab ID: 60130227012)
 - Sodium, Dissolved
- DR3A1210010200 (Lab ID: 60130227016)
 - Sodium, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: October 11, 2012

General Information:

9 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19762

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60130225001, 60130233001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1072030)
 - Manganese
 - Zinc
- MS (Lab ID: 1072032)
 - Manganese
- MSD (Lab ID: 1072031)
 - Manganese
 - Zinc

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: October 11, 2012

Analyte Comments:

QC Batch: MPRP/19762

B: Analyte was detected in the associated method blank.

- DR3A1209281000 (Lab ID: 60130225001)
 - Zinc
- DR3A1209281800 (Lab ID: 60130225005)
 - Zinc
- DR3A1209290200 (Lab ID: 60130226001)
 - Zinc
- DR3A1209291000 (Lab ID: 60130226005)
 - Zinc
- DR3A1209291800 (Lab ID: 60130227001)
 - Zinc
- DR3A1209300200 (Lab ID: 60130227005)
 - Zinc
- DR3A1209301200 (Lab ID: 60130227009)
 - Zinc
- DR3A1209301800 (Lab ID: 60130227012)
 - Zinc
- DR3A1210010200 (Lab ID: 60130227016)
 - Zinc

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: October 11, 2012

General Information:

9 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19761

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60130227005

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1072026)
 - Manganese, Dissolved
 - Zinc, Dissolved
- MSD (Lab ID: 1072027)
 - Manganese, Dissolved
 - Zinc, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: October 11, 2012

Analyte Comments:

QC Batch: MPRP/19761

B: Analyte was detected in the associated method blank.

- DR3A1209281000 (Lab ID: 60130225001)
 - Cadmium, Dissolved
 - Chromium, Dissolved
 - Copper, Dissolved
 - Manganese, Dissolved
 - Lead, Dissolved
 - Zinc, Dissolved
- DR3A1209281800 (Lab ID: 60130225005)
 - Cadmium, Dissolved
 - Chromium, Dissolved
 - Copper, Dissolved
 - Manganese, Dissolved
 - Lead, Dissolved
 - Zinc, Dissolved
- DR3A1209290200 (Lab ID: 60130226001)
 - Cadmium, Dissolved
 - Chromium, Dissolved
 - Copper, Dissolved
 - Manganese, Dissolved
 - Lead, Dissolved
 - Zinc, Dissolved
- DR3A1209291000 (Lab ID: 60130226005)
 - Cadmium, Dissolved
 - Chromium, Dissolved
 - Copper, Dissolved
 - Manganese, Dissolved
 - Lead, Dissolved
 - Zinc, Dissolved
- DR3A1209291800 (Lab ID: 60130227001)
 - Cadmium, Dissolved
 - Chromium, Dissolved
 - Copper, Dissolved
 - Manganese, Dissolved
 - Lead, Dissolved
 - Zinc, Dissolved
- DR3A1209300200 (Lab ID: 60130227005)
 - Cadmium, Dissolved
 - Chromium, Dissolved
 - Copper, Dissolved
 - Manganese, Dissolved
 - Lead, Dissolved
 - Zinc, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: October 11, 2012

Analyte Comments:

QC Batch: MPRP/19761

B: Analyte was detected in the associated method blank.

- DR3A1209301200 (Lab ID: 60130227009)
 - Cadmium, Dissolved
 - Chromium, Dissolved
 - Copper, Dissolved
 - Manganese, Dissolved
 - Lead, Dissolved
 - Zinc, Dissolved
- DR3A1209301800 (Lab ID: 60130227012)
 - Cadmium, Dissolved
 - Chromium, Dissolved
 - Copper, Dissolved
 - Manganese, Dissolved
 - Lead, Dissolved
 - Zinc, Dissolved
- DR3A1210010200 (Lab ID: 60130227016)
 - Cadmium, Dissolved
 - Chromium, Dissolved
 - Copper, Dissolved
 - Manganese, Dissolved
 - Lead, Dissolved
 - Zinc, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: October 11, 2012

General Information:

9 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: October 11, 2012

General Information:

9 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Sample: DR3A1209281000 Lab ID: 60130225001 Collected: 09/28/12 10:00 Received: 10/02/12 10:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	230000	ug/L	100	35.8	1	10/02/12 18:00	10/04/12 11:18	7440-70-2	
Iron	2450	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 11:18	7439-89-6	
Magnesium	19600	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 11:18	7439-95-4	
Potassium	3280	ug/L	500	64.1	1	10/02/12 18:00	10/04/12 11:18	7440-09-7	
Sodium	11300	ug/L	500	40.1	1	10/02/12 18:00	10/04/12 11:18	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	234000	ug/L	100	35.8	1	10/02/12 18:00	10/04/12 12:22	7440-70-2	D9,M1
Iron, Dissolved	ND	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 12:22	7439-89-6	
Magnesium, Dissolved	20000	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 12:22	7439-95-4	D9
Potassium, Dissolved	3100	ug/L	500	64.1	1	10/02/12 18:00	10/04/12 12:22	7440-09-7	
Sodium, Dissolved	11500	ug/L	500	40.1	1	10/02/12 18:00	10/04/12 12:22	7440-23-5	B,D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.63J	ug/L	1.0	0.14	1	10/03/12 11:00	10/07/12 18:55	7440-38-2	
Cadmium	21.8	ug/L	0.50	0.097	1	10/03/12 11:00	10/07/12 18:55	7440-43-9	
Chromium	ND	ug/L	1.0	0.11	1	10/03/12 11:00	10/07/12 18:55	7440-47-3	
Cobalt	3.1	ug/L	1.0	0.048	1	10/03/12 11:00	10/07/12 18:55	7440-48-4	
Copper	29.9	ug/L	1.0	0.45	1	10/03/12 11:00	10/07/12 18:55	7440-50-8	
Lead	1.0	ug/L	1.0	0.051	1	10/03/12 11:00	10/07/12 18:55	7439-92-1	
Manganese	2180	ug/L	1.0	0.23	1	10/03/12 11:00	10/07/12 18:55	7439-96-5	M1
Nickel	3.0	ug/L	1.0	0.35	1	10/03/12 11:00	10/07/12 18:55	7440-02-0	
Selenium	ND	ug/L	1.0	0.35	1	10/03/12 11:00	10/07/12 18:55	7782-49-2	
Zinc	4270	ug/L	10.0	1.6	1	10/03/12 11:00	10/07/12 18:55	7440-66-6	B,M1
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	28.2	ug/L	2.5	0.56	5	10/05/12 18:51	10/10/12 04:19	7439-93-2	
Arsenic, Dissolved	ND	ug/L	1.0	0.14	1	10/03/12 11:00	10/04/12 14:15	7440-38-2	
Cadmium, Dissolved	21.0	ug/L	0.50	0.097	1	10/03/12 11:00	10/04/12 14:15	7440-43-9	B
Chromium, Dissolved	1.0	ug/L	1.0	0.11	1	10/03/12 11:00	10/04/12 14:15	7440-47-3	B,D9
Cobalt, Dissolved	3.2	ug/L	1.0	0.048	1	10/03/12 11:00	10/04/12 14:15	7440-48-4	D9
Copper, Dissolved	5.2	ug/L	1.0	0.45	1	10/03/12 11:00	10/04/12 14:15	7440-50-8	B
Lead, Dissolved	0.22J	ug/L	1.0	0.051	1	10/03/12 11:00	10/04/12 14:15	7439-92-1	B
Manganese, Dissolved	411	ug/L	1.0	0.23	1	10/03/12 11:00	10/07/12 16:43	7439-96-5	B
Nickel, Dissolved	4.5	ug/L	1.0	0.35	1	10/03/12 11:00	10/04/12 14:15	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.35	1	10/03/12 11:00	10/04/12 14:15	7782-49-2	
Zinc, Dissolved	4050	ug/L	10.0	1.6	1	10/03/12 11:00	10/04/12 14:15	7440-66-6	B
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	92.6	mg/L	20.0	1.2	1		10/03/12 09:21		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/03/12 09:21		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/03/12 09:21		
Alkalinity, Total as CaCO3	92.6	mg/L	20.0	1.2	1		10/03/12 09:21		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Sample: DR3A1209281000		Lab ID: 60130225001		Collected: 09/28/12 10:00		Received: 10/02/12 10:25		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.15J	mg/L	1.0	0.078	1		10/02/12 22:23	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		10/02/12 22:23	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/02/12 22:23	16984-48-8	
Sulfate	648	mg/L	100	12.0	100		10/02/12 22:39	14808-79-8	

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Sample: DR3A1209281800 Lab ID: 60130225005 Collected: 09/28/12 18:00 Received: 10/02/12 10:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	229000	ug/L	100	35.8	1	10/02/12 18:00	10/04/12 11:31	7440-70-2	
Iron	3700	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 11:31	7439-89-6	
Magnesium	19800	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 11:31	7439-95-4	
Potassium	3940	ug/L	500	64.1	1	10/02/12 18:00	10/04/12 11:31	7440-09-7	
Sodium	11300	ug/L	500	40.1	1	10/02/12 18:00	10/04/12 11:31	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	227000	ug/L	100	35.8	1	10/02/12 18:00	10/04/12 12:35	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 12:35	7439-89-6	
Magnesium, Dissolved	19700	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 12:35	7439-95-4	
Potassium, Dissolved	3920	ug/L	500	64.1	1	10/02/12 18:00	10/04/12 12:35	7440-09-7	
Sodium, Dissolved	11200	ug/L	500	40.1	1	10/02/12 18:00	10/04/12 12:35	7440-23-5	B
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.60J	ug/L	1.0	0.14	1	10/03/12 11:00	10/07/12 19:11	7440-38-2	
Cadmium	22.5	ug/L	0.50	0.097	1	10/03/12 11:00	10/07/12 19:11	7440-43-9	
Chromium	ND	ug/L	1.0	0.11	1	10/03/12 11:00	10/07/12 19:11	7440-47-3	
Cobalt	2.9	ug/L	1.0	0.048	1	10/03/12 11:00	10/07/12 19:11	7440-48-4	
Copper	43.8	ug/L	1.0	0.45	1	10/03/12 11:00	10/07/12 19:11	7440-50-8	
Lead	1.5	ug/L	1.0	0.051	1	10/03/12 11:00	10/07/12 19:11	7439-92-1	
Manganese	2150	ug/L	1.0	0.23	1	10/03/12 11:00	10/07/12 19:11	7439-96-5	
Nickel	3.8	ug/L	1.0	0.35	1	10/03/12 11:00	10/07/12 19:11	7440-02-0	
Selenium	ND	ug/L	1.0	0.35	1	10/03/12 11:00	10/07/12 19:11	7782-49-2	
Zinc	4310	ug/L	10.0	1.6	1	10/03/12 11:00	10/07/12 19:11	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	30.4	ug/L	2.5	0.56	5	10/05/12 18:51	10/10/12 04:22	7439-93-2	
Arsenic, Dissolved	0.17J	ug/L	1.0	0.14	1	10/03/12 11:00	10/04/12 14:23	7440-38-2	
Cadmium, Dissolved	19.2	ug/L	0.50	0.097	1	10/03/12 11:00	10/04/12 14:23	7440-43-9	B
Chromium, Dissolved	0.60J	ug/L	1.0	0.11	1	10/03/12 11:00	10/04/12 14:23	7440-47-3	B
Cobalt, Dissolved	2.8	ug/L	1.0	0.048	1	10/03/12 11:00	10/04/12 14:23	7440-48-4	
Copper, Dissolved	3.8	ug/L	1.0	0.45	1	10/03/12 11:00	10/04/12 14:23	7440-50-8	B
Lead, Dissolved	0.17J	ug/L	1.0	0.051	1	10/03/12 11:00	10/04/12 14:23	7439-92-1	B
Manganese, Dissolved	1980	ug/L	5.0	1.2	5	10/03/12 11:00	10/07/12 16:51	7439-96-5	B
Nickel, Dissolved	4.3	ug/L	1.0	0.35	1	10/03/12 11:00	10/04/12 14:23	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.35	1	10/03/12 11:00	10/04/12 14:23	7782-49-2	
Zinc, Dissolved	3690	ug/L	10.0	1.6	1	10/03/12 11:00	10/04/12 14:23	7440-66-6	B
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	89.4	mg/L	20.0	1.2	1		10/03/12 09:29		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/03/12 09:29		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/03/12 09:29		
Alkalinity, Total as CaCO ₃	89.4	mg/L	20.0	1.2	1		10/03/12 09:29		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Sample: DR3A1209281800		Lab ID: 60130225005		Collected: 09/28/12 18:00		Received: 10/02/12 10:25		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.23J	mg/L	1.0	0.078	1		10/02/12 22:54	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		10/02/12 22:54	16887-00-6	
Fluoride	2.1	mg/L	0.20	0.011	1		10/02/12 22:54	16984-48-8	
Sulfate	654	mg/L	100	12.0	100		10/02/12 23:10	14808-79-8	

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Sample: DR3A1209290200 Lab ID: 60130226001 Collected: 09/29/12 02:00 Received: 10/02/12 10:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	232000	ug/L	100	35.8	1	10/02/12 18:00	10/04/12 11:35	7440-70-2	
Iron	3810	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 11:35	7439-89-6	
Magnesium	20000	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 11:35	7439-95-4	
Potassium	4920	ug/L	500	64.1	1	10/02/12 18:00	10/04/12 11:35	7440-09-7	
Sodium	11200	ug/L	500	40.1	1	10/02/12 18:00	10/04/12 11:35	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	229000	ug/L	100	35.8	1	10/02/12 18:00	10/04/12 12:39	7440-70-2	
Iron, Dissolved	26.5J	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 12:39	7439-89-6	
Magnesium, Dissolved	19800	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 12:39	7439-95-4	
Potassium, Dissolved	4930	ug/L	500	64.1	1	10/02/12 18:00	10/04/12 12:39	7440-09-7	D9
Sodium, Dissolved	11400	ug/L	500	40.1	1	10/02/12 18:00	10/04/12 12:39	7440-23-5	B,D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.63J	ug/L	1.0	0.14	1	10/03/12 11:00	10/07/12 19:15	7440-38-2	
Cadmium	21.8	ug/L	0.50	0.097	1	10/03/12 11:00	10/07/12 19:15	7440-43-9	
Chromium	0.17J	ug/L	1.0	0.11	1	10/03/12 11:00	10/07/12 19:15	7440-47-3	
Cobalt	2.9	ug/L	1.0	0.048	1	10/03/12 11:00	10/07/12 19:15	7440-48-4	
Copper	42.6	ug/L	1.0	0.45	1	10/03/12 11:00	10/07/12 19:15	7440-50-8	
Lead	1.5	ug/L	1.0	0.051	1	10/03/12 11:00	10/07/12 19:15	7439-92-1	
Manganese	2090	ug/L	1.0	0.23	1	10/03/12 11:00	10/07/12 19:15	7439-96-5	
Nickel	3.7	ug/L	1.0	0.35	1	10/03/12 11:00	10/07/12 19:15	7440-02-0	
Selenium	ND	ug/L	1.0	0.35	1	10/03/12 11:00	10/07/12 19:15	7782-49-2	
Zinc	4200	ug/L	10.0	1.6	1	10/03/12 11:00	10/07/12 19:15	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	36.2	ug/L	2.5	0.56	5	10/05/12 18:51	10/10/12 04:26	7439-93-2	
Arsenic, Dissolved	ND	ug/L	1.0	0.14	1	10/03/12 11:00	10/04/12 14:27	7440-38-2	
Cadmium, Dissolved	21.2	ug/L	0.50	0.097	1	10/03/12 11:00	10/04/12 14:27	7440-43-9	B
Chromium, Dissolved	0.75J	ug/L	1.0	0.11	1	10/03/12 11:00	10/04/12 14:27	7440-47-3	B
Cobalt, Dissolved	3.1	ug/L	1.0	0.048	1	10/03/12 11:00	10/04/12 14:27	7440-48-4	D9
Copper, Dissolved	4.4	ug/L	1.0	0.45	1	10/03/12 11:00	10/04/12 14:27	7440-50-8	B
Lead, Dissolved	0.18J	ug/L	1.0	0.051	1	10/03/12 11:00	10/04/12 14:27	7439-92-1	B
Manganese, Dissolved	2010	ug/L	5.0	1.2	5	10/03/12 11:00	10/07/12 16:55	7439-96-5	B
Nickel, Dissolved	4.5	ug/L	1.0	0.35	1	10/03/12 11:00	10/04/12 14:27	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.35	1	10/03/12 11:00	10/04/12 14:27	7782-49-2	
Zinc, Dissolved	4060	ug/L	10.0	1.6	1	10/03/12 11:00	10/04/12 14:27	7440-66-6	B
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	89.7	mg/L	20.0	1.2	1		10/03/12 09:33		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/03/12 09:33		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/03/12 09:33		
Alkalinity, Total as CaCO3	89.7	mg/L	20.0	1.2	1		10/03/12 09:33		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Sample: DR3A1209290200		Lab ID: 60130226001		Collected: 09/29/12 02:00		Received: 10/02/12 10:25		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.12J	mg/L	1.0	0.078	1		10/03/12 00:28	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		10/03/12 00:28	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/03/12 00:28	16984-48-8	
Sulfate	620	mg/L	100	12.0	100		10/03/12 01:16	14808-79-8	

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Sample: DR3A1209291000 Lab ID: 60130226005 Collected: 09/29/12 10:00 Received: 10/02/12 10:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	227000	ug/L	100	35.8	1	10/02/12 18:00	10/04/12 11:38	7440-70-2	
Iron	3700	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 11:38	7439-89-6	
Magnesium	19800	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 11:38	7439-95-4	
Potassium	6190	ug/L	500	64.1	1	10/02/12 18:00	10/04/12 11:38	7440-09-7	
Sodium	11100	ug/L	500	40.1	1	10/02/12 18:00	10/04/12 11:38	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	234000	ug/L	100	35.8	1	10/02/12 18:00	10/04/12 12:42	7440-70-2	D9
Iron, Dissolved	23.2J	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 12:42	7439-89-6	
Magnesium, Dissolved	20500	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 12:42	7439-95-4	D9
Potassium, Dissolved	6330	ug/L	500	64.1	1	10/02/12 18:00	10/04/12 12:42	7440-09-7	D9
Sodium, Dissolved	11400	ug/L	500	40.1	1	10/02/12 18:00	10/04/12 12:42	7440-23-5	B,D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.64J	ug/L	1.0	0.14	1	10/03/12 11:00	10/07/12 19:19	7440-38-2	
Cadmium	21.2	ug/L	0.50	0.097	1	10/03/12 11:00	10/07/12 19:19	7440-43-9	
Chromium	0.20J	ug/L	1.0	0.11	1	10/03/12 11:00	10/07/12 19:19	7440-47-3	
Cobalt	2.9	ug/L	1.0	0.048	1	10/03/12 11:00	10/07/12 19:19	7440-48-4	
Copper	41.4	ug/L	1.0	0.45	1	10/03/12 11:00	10/07/12 19:19	7440-50-8	
Lead	1.5	ug/L	1.0	0.051	1	10/03/12 11:00	10/07/12 19:19	7439-92-1	
Manganese	2040	ug/L	1.0	0.23	1	10/03/12 11:00	10/07/12 19:19	7439-96-5	
Nickel	3.6	ug/L	1.0	0.35	1	10/03/12 11:00	10/07/12 19:19	7440-02-0	
Selenium	ND	ug/L	1.0	0.35	1	10/03/12 11:00	10/07/12 19:19	7782-49-2	
Zinc	4010	ug/L	10.0	1.6	1	10/03/12 11:00	10/07/12 19:19	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	41.4	ug/L	2.5	0.56	5	10/05/12 18:51	10/10/12 04:30	7439-93-2	
Arsenic, Dissolved	ND	ug/L	1.0	0.14	1	10/03/12 11:00	10/04/12 14:31	7440-38-2	
Cadmium, Dissolved	20.5	ug/L	0.50	0.097	1	10/03/12 11:00	10/04/12 14:31	7440-43-9	B
Chromium, Dissolved	0.72J	ug/L	1.0	0.11	1	10/03/12 11:00	10/04/12 14:31	7440-47-3	B
Cobalt, Dissolved	3.0	ug/L	1.0	0.048	1	10/03/12 11:00	10/04/12 14:31	7440-48-4	D9
Copper, Dissolved	4.2	ug/L	1.0	0.45	1	10/03/12 11:00	10/04/12 14:31	7440-50-8	B
Lead, Dissolved	0.15J	ug/L	1.0	0.051	1	10/03/12 11:00	10/04/12 14:31	7439-92-1	B
Manganese, Dissolved	2040	ug/L	5.0	1.2	5	10/03/12 11:00	10/07/12 17:00	7439-96-5	B
Nickel, Dissolved	4.6	ug/L	1.0	0.35	1	10/03/12 11:00	10/04/12 14:31	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.35	1	10/03/12 11:00	10/04/12 14:31	7782-49-2	
Zinc, Dissolved	3900	ug/L	10.0	1.6	1	10/03/12 11:00	10/04/12 14:31	7440-66-6	B
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	90.6	mg/L	20.0	1.2	1		10/03/12 09:37		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/03/12 09:37		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/03/12 09:37		
Alkalinity, Total as CaCO3	90.6	mg/L	20.0	1.2	1		10/03/12 09:37		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Sample: DR3A1209291000		Lab ID: 60130226005		Collected: 09/29/12 10:00		Received: 10/02/12 10:25		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.12J	mg/L	1.0	0.078	1		10/03/12 01:31	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		10/03/12 01:31	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/03/12 01:31	16984-48-8	
Sulfate	654	mg/L	100	12.0	100		10/03/12 01:47	14808-79-8	

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Sample: DR3A1209291800 Lab ID: 60130227001 Collected: 09/29/12 18:00 Received: 10/02/12 10:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	222000	ug/L	100	35.8	1	10/02/12 18:00	10/04/12 11:41	7440-70-2	
Iron	3530	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 11:41	7439-89-6	
Magnesium	19300	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 11:41	7439-95-4	
Potassium	7330	ug/L	500	64.1	1	10/02/12 18:00	10/04/12 11:41	7440-09-7	
Sodium	11000	ug/L	500	40.1	1	10/02/12 18:00	10/04/12 11:41	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	232000	ug/L	100	35.8	1	10/02/12 18:00	10/04/12 12:52	7440-70-2	D9
Iron, Dissolved	ND	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 12:52	7439-89-6	
Magnesium, Dissolved	20500	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 12:52	7439-95-4	D9
Potassium, Dissolved	7760	ug/L	500	64.1	1	10/02/12 18:00	10/04/12 12:52	7440-09-7	D9
Sodium, Dissolved	11600	ug/L	500	40.1	1	10/02/12 18:00	10/04/12 12:52	7440-23-5	B,D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.66J	ug/L	1.0	0.14	1	10/03/12 11:00	10/07/12 19:23	7440-38-2	
Cadmium	20.6	ug/L	0.50	0.097	1	10/03/12 11:00	10/07/12 19:23	7440-43-9	
Chromium	ND	ug/L	1.0	0.11	1	10/03/12 11:00	10/07/12 19:23	7440-47-3	
Cobalt	2.8	ug/L	1.0	0.048	1	10/03/12 11:00	10/07/12 19:23	7440-48-4	
Copper	39.9	ug/L	1.0	0.45	1	10/03/12 11:00	10/07/12 19:23	7440-50-8	
Lead	1.3	ug/L	1.0	0.051	1	10/03/12 11:00	10/07/12 19:23	7439-92-1	
Manganese	2010	ug/L	1.0	0.23	1	10/03/12 11:00	10/07/12 19:23	7439-96-5	
Nickel	3.4	ug/L	1.0	0.35	1	10/03/12 11:00	10/07/12 19:23	7440-02-0	
Selenium	ND	ug/L	1.0	0.35	1	10/03/12 11:00	10/07/12 19:23	7782-49-2	
Zinc	3920	ug/L	10.0	1.6	1	10/03/12 11:00	10/07/12 19:23	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	44.3	ug/L	2.5	0.56	5	10/05/12 18:51	10/10/12 04:34	7439-93-2	
Arsenic, Dissolved	ND	ug/L	1.0	0.14	1	10/03/12 11:00	10/04/12 14:35	7440-38-2	
Cadmium, Dissolved	20.9	ug/L	0.50	0.097	1	10/03/12 11:00	10/04/12 14:35	7440-43-9	B,D9
Chromium, Dissolved	0.54J	ug/L	1.0	0.11	1	10/03/12 11:00	10/04/12 14:35	7440-47-3	B
Cobalt, Dissolved	3.1	ug/L	1.0	0.048	1	10/03/12 11:00	10/04/12 14:35	7440-48-4	D9
Copper, Dissolved	4.0	ug/L	1.0	0.45	1	10/03/12 11:00	10/04/12 14:35	7440-50-8	B
Lead, Dissolved	0.15J	ug/L	1.0	0.051	1	10/03/12 11:00	10/04/12 14:35	7439-92-1	B
Manganese, Dissolved	2040	ug/L	5.0	1.2	5	10/03/12 11:00	10/07/12 17:04	7439-96-5	B,D9
Nickel, Dissolved	4.6	ug/L	1.0	0.35	1	10/03/12 11:00	10/04/12 14:35	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.35	1	10/03/12 11:00	10/04/12 14:35	7782-49-2	
Zinc, Dissolved	3960	ug/L	10.0	1.6	1	10/03/12 11:00	10/04/12 14:35	7440-66-6	B,D9
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	92.7	mg/L	20.0	1.2	1		10/03/12 09:41		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/03/12 09:41		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/03/12 09:41		
Alkalinity, Total as CaCO3	92.7	mg/L	20.0	1.2	1		10/03/12 09:41		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Sample: DR3A1209291800		Lab ID: 60130227001		Collected: 09/29/12 18:00		Received: 10/02/12 10:25		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.15J	mg/L	1.0	0.078	1		10/03/12 02:03	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		10/03/12 02:03	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/03/12 02:03	16984-48-8	
Sulfate	652	mg/L	100	12.0	100		10/03/12 02:18	14808-79-8	

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Sample: DR3A1209300200 Lab ID: 60130227005 Collected: 09/30/12 02:00 Received: 10/02/12 10:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	232000	ug/L	100	35.8	1	10/02/12 18:00	10/04/12 11:45	7440-70-2	M1
Iron	3740	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 11:45	7439-89-6	
Magnesium	19900	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 11:45	7439-95-4	
Potassium	8680	ug/L	500	64.1	1	10/02/12 18:00	10/04/12 11:45	7440-09-7	
Sodium	11500	ug/L	500	40.1	1	10/02/12 18:00	10/04/12 11:45	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	233000	ug/L	100	35.8	1	10/02/12 18:00	10/04/12 12:56	7440-70-2	D9
Iron, Dissolved	30.9J	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 12:56	7439-89-6	
Magnesium, Dissolved	21100	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 12:56	7439-95-4	D9
Potassium, Dissolved	8840	ug/L	500	64.1	1	10/02/12 18:00	10/04/12 12:56	7440-09-7	D9
Sodium, Dissolved	11500	ug/L	500	40.1	1	10/02/12 18:00	10/04/12 12:56	7440-23-5	B
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.62J	ug/L	1.0	0.14	1	10/03/12 11:00	10/07/12 19:36	7440-38-2	
Cadmium	21.7	ug/L	0.50	0.097	1	10/03/12 11:00	10/07/12 19:36	7440-43-9	
Chromium	ND	ug/L	1.0	0.11	1	10/03/12 11:00	10/07/12 19:36	7440-47-3	
Cobalt	3.0	ug/L	1.0	0.048	1	10/03/12 11:00	10/07/12 19:36	7440-48-4	
Copper	41.8	ug/L	1.0	0.45	1	10/03/12 11:00	10/07/12 19:36	7440-50-8	
Lead	1.5	ug/L	1.0	0.051	1	10/03/12 11:00	10/07/12 19:36	7439-92-1	
Manganese	2090	ug/L	1.0	0.23	1	10/03/12 11:00	10/07/12 19:36	7439-96-5	
Nickel	3.3	ug/L	1.0	0.35	1	10/03/12 11:00	10/07/12 19:36	7440-02-0	
Selenium	ND	ug/L	1.0	0.35	1	10/03/12 11:00	10/07/12 19:36	7782-49-2	
Zinc	4070	ug/L	10.0	1.6	1	10/03/12 11:00	10/07/12 19:36	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	49.7	ug/L	2.5	0.56	5	10/05/12 18:51	10/10/12 04:38	7439-93-2	
Arsenic, Dissolved	ND	ug/L	1.0	0.14	1	10/03/12 11:00	10/04/12 14:39	7440-38-2	
Cadmium, Dissolved	19.4	ug/L	0.50	0.097	1	10/03/12 11:00	10/04/12 14:39	7440-43-9	B
Chromium, Dissolved	0.48J	ug/L	1.0	0.11	1	10/03/12 11:00	10/04/12 14:39	7440-47-3	B
Cobalt, Dissolved	2.9	ug/L	1.0	0.048	1	10/03/12 11:00	10/04/12 14:39	7440-48-4	
Copper, Dissolved	3.8	ug/L	1.0	0.45	1	10/03/12 11:00	10/04/12 14:39	7440-50-8	B
Lead, Dissolved	0.15J	ug/L	1.0	0.051	1	10/03/12 11:00	10/04/12 14:39	7439-92-1	B
Manganese, Dissolved	2000	ug/L	5.0	1.2	5	10/03/12 11:00	10/07/12 17:16	7439-96-5	B,M1
Nickel, Dissolved	4.3	ug/L	1.0	0.35	1	10/03/12 11:00	10/04/12 14:39	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.35	1	10/03/12 11:00	10/04/12 14:39	7782-49-2	
Zinc, Dissolved	3690	ug/L	10.0	1.6	1	10/03/12 11:00	10/04/12 14:39	7440-66-6	B,M1
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	91.2	mg/L	20.0	1.2	1		10/03/12 09:46		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/03/12 09:46		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/03/12 09:46		
Alkalinity, Total as CaCO3	91.2	mg/L	20.0	1.2	1		10/03/12 09:46		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Sample: DR3A1209300200		Lab ID: 60130227005		Collected: 09/30/12 02:00		Received: 10/02/12 10:25		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.13J	mg/L	1.0	0.078	1		10/03/12 02:34	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		10/03/12 02:34	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/03/12 02:34	16984-48-8	
Sulfate	655	mg/L	100	12.0	100		10/03/12 02:50	14808-79-8	

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Sample: DR3A1209301200 Lab ID: 60130227009 Collected: 09/30/12 12:00 Received: 10/02/12 10:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	232000	ug/L	100	35.8	1	10/02/12 18:00	10/04/12 11:48	7440-70-2	
Iron	3640	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 11:48	7439-89-6	
Magnesium	19900	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 11:48	7439-95-4	
Potassium	10200	ug/L	500	64.1	1	10/02/12 18:00	10/04/12 11:48	7440-09-7	
Sodium	11400	ug/L	500	40.1	1	10/02/12 18:00	10/04/12 11:48	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	229000	ug/L	100	35.8	1	10/02/12 18:00	10/04/12 12:59	7440-70-2	
Iron, Dissolved	236	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 12:59	7439-89-6	
Magnesium, Dissolved	20600	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 12:59	7439-95-4	D9
Potassium, Dissolved	10200	ug/L	500	64.1	1	10/02/12 18:00	10/04/12 12:59	7440-09-7	
Sodium, Dissolved	11400	ug/L	500	40.1	1	10/02/12 18:00	10/04/12 12:59	7440-23-5	B
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.54J	ug/L	1.0	0.14	1	10/03/12 11:00	10/07/12 19:40	7440-38-2	
Cadmium	19.1	ug/L	0.50	0.097	1	10/03/12 11:00	10/07/12 19:40	7440-43-9	
Chromium	ND	ug/L	1.0	0.11	1	10/03/12 11:00	10/07/12 19:40	7440-47-3	
Cobalt	2.5	ug/L	1.0	0.048	1	10/03/12 11:00	10/07/12 19:40	7440-48-4	
Copper	35.9	ug/L	1.0	0.45	1	10/03/12 11:00	10/07/12 19:40	7440-50-8	
Lead	1.2	ug/L	1.0	0.051	1	10/03/12 11:00	10/07/12 19:40	7439-92-1	
Manganese	1870	ug/L	1.0	0.23	1	10/03/12 11:00	10/07/12 19:40	7439-96-5	
Nickel	2.9	ug/L	1.0	0.35	1	10/03/12 11:00	10/07/12 19:40	7440-02-0	
Selenium	ND	ug/L	1.0	0.35	1	10/03/12 11:00	10/07/12 19:40	7782-49-2	
Zinc	3610	ug/L	10.0	1.6	1	10/03/12 11:00	10/07/12 19:40	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	53.0	ug/L	2.5	0.56	5	10/05/12 18:51	10/10/12 04:51	7439-93-2	
Arsenic, Dissolved	ND	ug/L	1.0	0.14	1	10/03/12 11:00	10/04/12 15:00	7440-38-2	
Cadmium, Dissolved	19.5	ug/L	0.50	0.097	1	10/03/12 11:00	10/04/12 15:00	7440-43-9	B
Chromium, Dissolved	0.91J	ug/L	1.0	0.11	1	10/03/12 11:00	10/04/12 15:00	7440-47-3	B
Cobalt, Dissolved	2.9	ug/L	1.0	0.048	1	10/03/12 11:00	10/04/12 15:00	7440-48-4	D9
Copper, Dissolved	5.0	ug/L	1.0	0.45	1	10/03/12 11:00	10/04/12 15:00	7440-50-8	B
Lead, Dissolved	0.16J	ug/L	1.0	0.051	1	10/03/12 11:00	10/04/12 15:00	7439-92-1	B
Manganese, Dissolved	1980	ug/L	5.0	1.2	5	10/03/12 11:00	10/07/12 17:20	7439-96-5	B,D9
Nickel, Dissolved	4.6	ug/L	1.0	0.35	1	10/03/12 11:00	10/04/12 15:00	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.35	1	10/03/12 11:00	10/04/12 15:00	7782-49-2	
Zinc, Dissolved	3680	ug/L	10.0	1.6	1	10/03/12 11:00	10/04/12 15:00	7440-66-6	B,D9
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	94.8	mg/L	20.0	1.2	1		10/03/12 09:59		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/03/12 09:59		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/03/12 09:59		
Alkalinity, Total as CaCO3	94.8	mg/L	20.0	1.2	1		10/03/12 09:59		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Sample: DR3A1209301200		Lab ID: 60130227009		Collected: 09/30/12 12:00		Received: 10/02/12 10:25		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.12J	mg/L	1.0	0.078	1		10/03/12 03:05	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		10/03/12 03:05	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/03/12 03:05	16984-48-8	
Sulfate	648	mg/L	100	12.0	100		10/03/12 03:21	14808-79-8	

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Sample: DR3A1209301800 Lab ID: 60130227012 Collected: 09/30/12 18:00 Received: 10/02/12 10:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	230000	ug/L	100	35.8	1	10/02/12 18:00	10/04/12 11:51	7440-70-2	
Iron	3620	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 11:51	7439-89-6	
Magnesium	19800	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 11:51	7439-95-4	
Potassium	11100	ug/L	500	64.1	1	10/02/12 18:00	10/04/12 11:51	7440-09-7	
Sodium	11300	ug/L	500	40.1	1	10/02/12 18:00	10/04/12 11:51	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	241000	ug/L	100	35.8	1	10/02/12 18:00	10/04/12 13:02	7440-70-2	D9
Iron, Dissolved	ND	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 13:02	7439-89-6	
Magnesium, Dissolved	22000	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 13:02	7439-95-4	D9
Potassium, Dissolved	11700	ug/L	500	64.1	1	10/02/12 18:00	10/04/12 13:02	7440-09-7	D9
Sodium, Dissolved	11800	ug/L	500	40.1	1	10/02/12 18:00	10/04/12 13:02	7440-23-5	B,D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.56J	ug/L	1.0	0.14	1	10/03/12 11:00	10/07/12 19:44	7440-38-2	
Cadmium	21.7	ug/L	0.50	0.097	1	10/03/12 11:00	10/07/12 19:44	7440-43-9	
Chromium	0.20J	ug/L	1.0	0.11	1	10/03/12 11:00	10/07/12 19:44	7440-47-3	
Cobalt	3.0	ug/L	1.0	0.048	1	10/03/12 11:00	10/07/12 19:44	7440-48-4	
Copper	41.0	ug/L	1.0	0.45	1	10/03/12 11:00	10/07/12 19:44	7440-50-8	
Lead	1.4	ug/L	1.0	0.051	1	10/03/12 11:00	10/07/12 19:44	7439-92-1	
Manganese	2100	ug/L	1.0	0.23	1	10/03/12 11:00	10/07/12 19:44	7439-96-5	
Nickel	3.9	ug/L	1.0	0.35	1	10/03/12 11:00	10/07/12 19:44	7440-02-0	
Selenium	ND	ug/L	1.0	0.35	1	10/03/12 11:00	10/07/12 19:44	7782-49-2	
Zinc	4030	ug/L	10.0	1.6	1	10/03/12 11:00	10/07/12 19:44	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	55.9	ug/L	2.5	0.56	5	10/05/12 18:51	10/10/12 04:55	7439-93-2	
Arsenic, Dissolved	ND	ug/L	1.0	0.14	1	10/03/12 11:00	10/04/12 15:04	7440-38-2	
Cadmium, Dissolved	19.1	ug/L	0.50	0.097	1	10/03/12 11:00	10/04/12 15:04	7440-43-9	B
Chromium, Dissolved	0.52J	ug/L	1.0	0.11	1	10/03/12 11:00	10/04/12 15:04	7440-47-3	B
Cobalt, Dissolved	2.9	ug/L	1.0	0.048	1	10/03/12 11:00	10/04/12 15:04	7440-48-4	
Copper, Dissolved	3.8	ug/L	1.0	0.45	1	10/03/12 11:00	10/04/12 15:04	7440-50-8	B
Lead, Dissolved	0.15J	ug/L	1.0	0.051	1	10/03/12 11:00	10/04/12 15:04	7439-92-1	B
Manganese, Dissolved	1950	ug/L	5.0	1.2	5	10/03/12 11:00	10/07/12 17:24	7439-96-5	B
Nickel, Dissolved	4.7	ug/L	1.0	0.35	1	10/03/12 11:00	10/04/12 15:04	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.35	1	10/03/12 11:00	10/04/12 15:04	7782-49-2	
Zinc, Dissolved	3660	ug/L	10.0	1.6	1	10/03/12 11:00	10/04/12 15:04	7440-66-6	B
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	96.4	mg/L	20.0	1.2	1		10/03/12 10:03		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/03/12 10:03		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/03/12 10:03		
Alkalinity, Total as CaCO3	96.4	mg/L	20.0	1.2	1		10/03/12 10:03		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Sample: DR3A1209301800		Lab ID: 60130227012		Collected: 09/30/12 18:00		Received: 10/02/12 10:25		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.10J	mg/L	1.0	0.078	1		10/03/12 03:37	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		10/03/12 03:37	16887-00-6	
Fluoride	2.1	mg/L	0.20	0.011	1		10/03/12 03:37	16984-48-8	
Sulfate	622	mg/L	100	12.0	100		10/03/12 04:24	14808-79-8	

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Sample: DR3A1210010200 Lab ID: 60130227016 Collected: 10/01/12 02:00 Received: 10/02/12 10:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	230000	ug/L	100	35.8	1	10/02/12 18:00	10/04/12 11:55	7440-70-2	
Iron	3640	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 11:55	7439-89-6	
Magnesium	20000	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 11:55	7439-95-4	
Potassium	11700	ug/L	500	64.1	1	10/02/12 18:00	10/04/12 11:55	7440-09-7	
Sodium	11400	ug/L	500	40.1	1	10/02/12 18:00	10/04/12 11:55	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	240000	ug/L	100	35.8	1	10/02/12 18:00	10/04/12 13:06	7440-70-2	D9
Iron, Dissolved	22.9J	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 13:06	7439-89-6	
Magnesium, Dissolved	21400	ug/L	50.0	17.2	1	10/02/12 18:00	10/04/12 13:06	7439-95-4	D9
Potassium, Dissolved	12300	ug/L	500	64.1	1	10/02/12 18:00	10/04/12 13:06	7440-09-7	D9
Sodium, Dissolved	11700	ug/L	500	40.1	1	10/02/12 18:00	10/04/12 13:06	7440-23-5	B,D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.55J	ug/L	1.0	0.14	1	10/03/12 11:00	10/07/12 19:48	7440-38-2	
Cadmium	20.0	ug/L	0.50	0.097	1	10/03/12 11:00	10/07/12 19:48	7440-43-9	
Chromium	ND	ug/L	1.0	0.11	1	10/03/12 11:00	10/07/12 19:48	7440-47-3	
Cobalt	2.7	ug/L	1.0	0.048	1	10/03/12 11:00	10/07/12 19:48	7440-48-4	
Copper	37.0	ug/L	1.0	0.45	1	10/03/12 11:00	10/07/12 19:48	7440-50-8	
Lead	1.3	ug/L	1.0	0.051	1	10/03/12 11:00	10/07/12 19:48	7439-92-1	
Manganese	1930	ug/L	1.0	0.23	1	10/03/12 11:00	10/07/12 19:48	7439-96-5	
Nickel	3.0	ug/L	1.0	0.35	1	10/03/12 11:00	10/07/12 19:48	7440-02-0	
Selenium	ND	ug/L	1.0	0.35	1	10/03/12 11:00	10/07/12 19:48	7782-49-2	
Zinc	3650	ug/L	10.0	1.6	1	10/03/12 11:00	10/07/12 19:48	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	56.2	ug/L	2.5	0.56	5	10/05/12 18:51	10/10/12 04:59	7439-93-2	
Arsenic, Dissolved	ND	ug/L	1.0	0.14	1	10/03/12 11:00	10/04/12 15:08	7440-38-2	
Cadmium, Dissolved	19.2	ug/L	0.50	0.097	1	10/03/12 11:00	10/04/12 15:08	7440-43-9	B
Chromium, Dissolved	1.3	ug/L	1.0	0.11	1	10/03/12 11:00	10/04/12 15:08	7440-47-3	B,D9
Cobalt, Dissolved	3.0	ug/L	1.0	0.048	1	10/03/12 11:00	10/04/12 15:08	7440-48-4	D9
Copper, Dissolved	3.7	ug/L	1.0	0.45	1	10/03/12 11:00	10/04/12 15:08	7440-50-8	B
Lead, Dissolved	0.15J	ug/L	1.0	0.051	1	10/03/12 11:00	10/04/12 15:08	7439-92-1	B
Manganese, Dissolved	2060	ug/L	5.0	1.2	5	10/03/12 11:00	10/07/12 17:28	7439-96-5	B,D9
Nickel, Dissolved	4.7	ug/L	1.0	0.35	1	10/03/12 11:00	10/04/12 15:08	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.35	1	10/03/12 11:00	10/04/12 15:08	7782-49-2	
Zinc, Dissolved	3710	ug/L	10.0	1.6	1	10/03/12 11:00	10/04/12 15:08	7440-66-6	B,D9
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	95.5	mg/L	20.0	1.2	1		10/03/12 10:07		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/03/12 10:07		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/03/12 10:07		
Alkalinity, Total as CaCO3	95.5	mg/L	20.0	1.2	1		10/03/12 10:07		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Sample: DR3A1210010200		Lab ID: 60130227016		Collected: 10/01/12 02:00		Received: 10/02/12 10:25		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.11J	mg/L	1.0	0.078	1		10/03/12 04:40	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		10/03/12 04:40	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/03/12 04:40	16984-48-8	
Sulfate	646	mg/L	100	12.0	100		10/03/12 04:55	14808-79-8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

QC Batch:	ICPM/35561	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET Dissolved
Associated Lab Samples:	60130225001, 60130225005, 60130226001, 60130226005, 60130227001, 60130227005, 60130227009, 60130227012, 60130227016		

METHOD BLANK:	1303090	Matrix:	Water
Associated Lab Samples:	60130225001, 60130225005, 60130226001, 60130226005, 60130227001, 60130227005, 60130227009, 60130227012, 60130227016		

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lithium, Dissolved	ug/L	ND	0.50	10/10/12 03:10	

LABORATORY CONTROL SAMPLE: 1303091						
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lithium, Dissolved	ug/L	80	77.8	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:												
1303092					1303093							
		10207602001	MS Spike	MSD Spike								
Parameter	Units	Result	Conc.	Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lithium, Dissolved	ug/L	4.2	80	80	84.7	80.4	101	95	70-130	5	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:												
1303094					1303095							
		60130313001	MS	MSD								
Parameter	Units	Result	Spike Conc.	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lithium, Dissolved	ug/L	60.0	80	80	139	144	98	106	70-130	4	20	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

QC Batch:	MPRP/19753	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Total
Associated Lab Samples:	60130225001, 60130225005, 60130226001, 60130226005, 60130227001, 60130227005, 60130227009, 60130227012, 60130227016		

METHOD BLANK: 1071770 Matrix: Water

Associated Lab Samples: 60130225001, 60130225005, 60130226001, 60130226005, 60130227001, 60130227005, 60130227009, 60130227012, 60130227016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	ug/L	ND	100	10/04/12 10:51	
Iron	ug/L	ND	50.0	10/04/12 10:51	
Magnesium	ug/L	ND	50.0	10/04/12 10:51	
Potassium	ug/L	ND	500	10/04/12 10:51	
Sodium	ug/L	ND	500	10/04/12 10:51	

LABORATORY CONTROL SAMPLE: 1071771

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	9580	96	85-115	
Iron	ug/L	10000	9850	99	85-115	
Magnesium	ug/L	10000	9960	100	85-115	
Potassium	ug/L	10000	10100	101	85-115	
Sodium	ug/L	10000	10200	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1071772 1071773

Parameter	Units	60129844002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L		10000	10000	115000	118000	73	98	70-130	2	9	
Iron	ug/L	3710	10000	10000	13300	13400	96	97	70-130	1	10	
Magnesium	ug/L		10000	10000	24400	24900	89	94	70-130	2	9	
Potassium	ug/L	9360	10000	10000	19400	19600	100	103	70-130	1	7	
Sodium	ug/L	189000	10000	10000	192000	195000	34	59	70-130	1	8 M1	

MATRIX SPIKE SAMPLE: 1071774

Parameter	Units	60130227005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	232000	10000	231000	-15	70-130	M1
Iron	ug/L	3740	10000	13000	92	70-130	
Magnesium	ug/L	19900	10000	28000	80	70-130	
Potassium	ug/L	8680	10000	18400	97	70-130	
Sodium	ug/L	11500	10000	20500	90	70-130	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

QC Batch:	MPRP/19751	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Dissolved
Associated Lab Samples:	60130225001, 60130225005, 60130226001, 60130226005, 60130227001, 60130227005, 60130227009, 60130227012, 60130227016		

METHOD BLANK: 1071754 Matrix: Water

Associated Lab Samples: 60130225001, 60130225005, 60130226001, 60130226005, 60130227001, 60130227005, 60130227009, 60130227012, 60130227016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	10/04/12 12:12	
Iron, Dissolved	ug/L	ND	50.0	10/04/12 12:12	
Magnesium, Dissolved	ug/L	ND	50.0	10/04/12 12:12	
Potassium, Dissolved	ug/L	ND	500	10/04/12 12:12	
Sodium, Dissolved	ug/L	46.4J	500	10/04/12 12:12	

LABORATORY CONTROL SAMPLE: 1071755

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9620	96	85-115	
Iron, Dissolved	ug/L	10000	9690	97	85-115	
Magnesium, Dissolved	ug/L	10000	10400	104	85-115	
Potassium, Dissolved	ug/L	10000	10200	102	85-115	
Sodium, Dissolved	ug/L	10000	10400	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1071756 1071757

Parameter	Units	60130225001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium, Dissolved	ug/L	234000	10000	10000	231000	234000	-27	4	70-130	1	9	M1
Iron, Dissolved	ug/L	ND	10000	10000	9280	9340	93	93	70-130	1	10	
Magnesium, Dissolved	ug/L	20000	10000	10000	28600	28800	85	88	70-130	1	9	
Potassium, Dissolved	ug/L	3100	10000	10000	13100	13200	100	101	70-130	1	7	
Sodium, Dissolved	ug/L	11500	10000	10000	21000	21300	95	98	70-130	2	8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

QC Batch:	MPRP/19762	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET
Associated Lab Samples:	60130225001, 60130225005, 60130226001, 60130226005, 60130227001, 60130227005, 60130227009, 60130227012, 60130227016		

METHOD BLANK: 1072028 Matrix: Water

Associated Lab Samples: 60130225001, 60130225005, 60130226001, 60130226005, 60130227001, 60130227005, 60130227009, 60130227012, 60130227016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	10/07/12 18:47	
Cadmium	ug/L	ND	0.50	10/07/12 18:47	
Chromium	ug/L	ND	1.0	10/07/12 18:47	
Cobalt	ug/L	ND	1.0	10/07/12 18:47	
Copper	ug/L	ND	1.0	10/07/12 18:47	
Lead	ug/L	ND	1.0	10/07/12 18:47	
Manganese	ug/L	ND	1.0	10/07/12 18:47	
Nickel	ug/L	ND	1.0	10/07/12 18:47	
Selenium	ug/L	ND	1.0	10/07/12 18:47	
Zinc	ug/L	1.9J	10.0	10/07/12 18:47	

LABORATORY CONTROL SAMPLE: 1072029

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	40.1	100	85-115	
Cadmium	ug/L	40	40.2	100	85-115	
Chromium	ug/L	40	40.4	101	85-115	
Cobalt	ug/L	40	39.9	100	85-115	
Copper	ug/L	40	40.2	100	85-115	
Lead	ug/L	40	40.8	102	85-115	
Manganese	ug/L	40	40.5	101	85-115	
Nickel	ug/L	40	40.7	102	85-115	
Selenium	ug/L	40	39.6	99	85-115	
Zinc	ug/L	100	107	107	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1072030 1072031

Parameter	Units	60130225001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	0.63J	40	40	41.7	40.6	103	100	70-130	3	20	
Cadmium	ug/L	21.8	40	40	61.5	61.3	99	99	70-130	0	20	
Chromium	ug/L	ND	40	40	41.0	39.5	102	99	70-130	4	20	
Cobalt	ug/L	3.1	40	40	42.4	41.5	98	96	70-130	2	20	
Copper	ug/L	29.9	40	40	69.5	65.9	99	90	70-130	5	20	
Lead	ug/L	1.0	40	40	41.4	40.4	101	99	70-130	2	20	
Manganese	ug/L	2180	40	40	2200	2130	32	-142	70-130	3	20 M1	
Nickel	ug/L	3.0	40	40	43.2	41.6	101	96	70-130	4	20	
Selenium	ug/L	ND	40	40	39.5	38.7	98	96	70-130	2	20	

Date: 10/11/2012 06:01 PM

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1072030 1072031												
Parameter	Units	60130225001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
Zinc	ug/L	4270	100	100	4300	4210	28	-59	70-130	2	20	M1

MATRIX SPIKE SAMPLE: 1072032							
Parameter	Units	60130233001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	2.9	40	43.4	101	70-130	
Cadmium	ug/L	ND	40	40.2	101	70-130	
Chromium	ug/L	ND	40	39.8	99	70-130	
Cobalt	ug/L	ND	40	38.0	95	70-130	
Copper	ug/L	ND	40	38.0	93	70-130	
Lead	ug/L	ND	40	40.3	101	70-130	
Manganese	ug/L	573	40	629	139	70-130	M1
Nickel	ug/L	ND	40	36.8	92	70-130	
Selenium	ug/L	ND	40	39.7	98	70-130	
Zinc	ug/L	ND	100	108	106	70-130	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

QC Batch:	MPRP/19761	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET Dissolved
Associated Lab Samples:	60130225001, 60130225005, 60130226001, 60130226005, 60130227001, 60130227005, 60130227009, 60130227012, 60130227016		

METHOD BLANK: 1072024 Matrix: Water

Associated Lab Samples: 60130225001, 60130225005, 60130226001, 60130226005, 60130227001, 60130227005, 60130227009, 60130227012, 60130227016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	10/04/12 14:07	
Cadmium, Dissolved	ug/L	0.12J	0.50	10/04/12 14:07	
Chromium, Dissolved	ug/L	0.33J	1.0	10/04/12 14:07	
Cobalt, Dissolved	ug/L	ND	1.0	10/04/12 14:07	
Copper, Dissolved	ug/L	0.61J	1.0	10/04/12 14:07	
Lead, Dissolved	ug/L	0.18J	1.0	10/04/12 14:07	
Manganese, Dissolved	ug/L	1.1	1.0	10/07/12 16:27	
Nickel, Dissolved	ug/L	ND	1.0	10/04/12 14:07	
Selenium, Dissolved	ug/L	ND	1.0	10/04/12 14:07	
Zinc, Dissolved	ug/L	4.9J	10.0	10/07/12 16:27	

LABORATORY CONTROL SAMPLE: 1072025

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	40.0	100	85-115	
Cadmium, Dissolved	ug/L	40	41.6	104	85-115	
Chromium, Dissolved	ug/L	40	42.2	106	85-115	
Cobalt, Dissolved	ug/L	40	40.7	102	85-115	
Copper, Dissolved	ug/L	40	40.4	101	85-115	
Lead, Dissolved	ug/L	40	42.3	106	85-115	
Manganese, Dissolved	ug/L	40	42.2	106	85-115	
Nickel, Dissolved	ug/L	40	42.0	105	85-115	
Selenium, Dissolved	ug/L	40	40.4	101	85-115	
Zinc, Dissolved	ug/L	100	114	114	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1072026 1072027

Parameter	Units	60130227005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	ND	40	40	35.9	38.0	90	95	70-130	6	20	
Cadmium, Dissolved	ug/L	19.4	40	40	55.6	56.8	91	94	70-130	2	20	
Chromium, Dissolved	ug/L	0.48J	40	40	37.8	39.3	93	97	70-130	4	20	
Cobalt, Dissolved	ug/L	2.9	40	40	38.3	40.8	89	95	70-130	6	20	
Copper, Dissolved	ug/L	3.8	40	40	37.9	39.7	85	90	70-130	5	20	
Lead, Dissolved	ug/L	0.15J	40	40	38.3	39.5	95	98	70-130	3	20	
Manganese, Dissolved	ug/L	2000	40	40	2080	2020	204	55	70-130	3	20 M1	
Nickel, Dissolved	ug/L	4.3	40	40	40.7	42.4	91	95	70-130	4	20	
Selenium, Dissolved	ug/L	ND	40	40	35.9	37.1	89	92	70-130	3	20	

Date: 10/11/2012 06:01 PM

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:												
			1072026		1072027							
Parameter	Units	60130227005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Zinc, Dissolved	ug/L	3690	100	100	3660	3760	-37	63	70-130	3	20	M1

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

QC Batch:	WET/37472	Analysis Method:	SM 2320B
QC Batch Method:	SM 2320B	Analysis Description:	2320B Alkalinity
Associated Lab Samples:	60130225001, 60130225005, 60130226001, 60130226005, 60130227001, 60130227005, 60130227009, 60130227012, 60130227016		

METHOD BLANK: 1071915 Matrix: Water

Associated Lab Samples: 60130225001, 60130225005, 60130226001, 60130226005, 60130227001, 60130227005, 60130227009, 60130227012, 60130227016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	10/03/12 09:11	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	10/03/12 09:11	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	10/03/12 09:11	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	10/03/12 09:11	

LABORATORY CONTROL SAMPLE: 1071916

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	489	98	90-110	

SAMPLE DUPLICATE: 1071917

Parameter	Units	60130225001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	92.6	92.2	0	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	92.6	92.2	0	9	

SAMPLE DUPLICATE: 1071918

Parameter	Units	60130206005 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	499	502	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	499	502	1	9	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Project No.: 60130225

QC Batch:	WETA/21871	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
Associated Lab Samples:	60130225001, 60130225005, 60130226001, 60130226005, 60130227001, 60130227005, 60130227009, 60130227012, 60130227016		

METHOD BLANK: 1071847 Matrix: Water

Associated Lab Samples: 60130225001, 60130225005, 60130226001, 60130226005, 60130227001, 60130227005, 60130227009, 60130227012, 60130227016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	10/02/12 21:36	
Chloride	mg/L	ND	1.0	10/02/12 21:36	
Fluoride	mg/L	ND	0.20	10/02/12 21:36	
Sulfate	mg/L	ND	1.0	10/02/12 21:36	

LABORATORY CONTROL SAMPLE: 1071848

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.8	96	90-110	
Chloride	mg/L	5	4.5	91	90-110	
Fluoride	mg/L	2.5	2.4	96	90-110	
Sulfate	mg/L	5	5.0	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1071849 1071850

Parameter	Units	60130225005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	0.23J	5	5	5.4	5.5	104	105	75-119	1	10	
Chloride	mg/L	ND	5	5	5.3	5.3	102	103	64-118	1	12	
Fluoride	mg/L	2.1	2.5	2.5	4.8	4.8	107	108	75-110	0	10	
Sulfate	mg/L	654	500	500	1140	1140	96	98	61-119	1	10	

QUALIFIERS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

PASI-M Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60130225001	DR3A1209281000	EPA 200.7	MPRP/19753	EPA 200.7	ICP/16269
60130225005	DR3A1209281800	EPA 200.7	MPRP/19753	EPA 200.7	ICP/16269
60130226001	DR3A1209290200	EPA 200.7	MPRP/19753	EPA 200.7	ICP/16269
60130226005	DR3A1209291000	EPA 200.7	MPRP/19753	EPA 200.7	ICP/16269
60130227001	DR3A1209291800	EPA 200.7	MPRP/19753	EPA 200.7	ICP/16269
60130227005	DR3A1209300200	EPA 200.7	MPRP/19753	EPA 200.7	ICP/16269
60130227009	DR3A1209301200	EPA 200.7	MPRP/19753	EPA 200.7	ICP/16269
60130227012	DR3A1209301800	EPA 200.7	MPRP/19753	EPA 200.7	ICP/16269
60130227016	DR3A1210010200	EPA 200.7	MPRP/19753	EPA 200.7	ICP/16269
60130225001	DR3A1209281000	EPA 200.7	MPRP/19751	EPA 200.7	ICP/16270
60130225005	DR3A1209281800	EPA 200.7	MPRP/19751	EPA 200.7	ICP/16270
60130226001	DR3A1209290200	EPA 200.7	MPRP/19751	EPA 200.7	ICP/16270
60130226005	DR3A1209291000	EPA 200.7	MPRP/19751	EPA 200.7	ICP/16270
60130227001	DR3A1209291800	EPA 200.7	MPRP/19751	EPA 200.7	ICP/16270
60130227005	DR3A1209300200	EPA 200.7	MPRP/19751	EPA 200.7	ICP/16270
60130227009	DR3A1209301200	EPA 200.7	MPRP/19751	EPA 200.7	ICP/16270
60130227012	DR3A1209301800	EPA 200.7	MPRP/19751	EPA 200.7	ICP/16270
60130227016	DR3A1210010200	EPA 200.7	MPRP/19751	EPA 200.7	ICP/16270
60130225001	DR3A1209281000	EPA 200.8	MPRP/19762	EPA 200.8	ICPM/1673
60130225005	DR3A1209281800	EPA 200.8	MPRP/19762	EPA 200.8	ICPM/1673
60130226001	DR3A1209290200	EPA 200.8	MPRP/19762	EPA 200.8	ICPM/1673
60130226005	DR3A1209291000	EPA 200.8	MPRP/19762	EPA 200.8	ICPM/1673
60130227001	DR3A1209291800	EPA 200.8	MPRP/19762	EPA 200.8	ICPM/1673
60130227005	DR3A1209300200	EPA 200.8	MPRP/19762	EPA 200.8	ICPM/1673
60130227009	DR3A1209301200	EPA 200.8	MPRP/19762	EPA 200.8	ICPM/1673
60130227012	DR3A1209301800	EPA 200.8	MPRP/19762	EPA 200.8	ICPM/1673
60130227016	DR3A1210010200	EPA 200.8	MPRP/19762	EPA 200.8	ICPM/1673
60130225001	DR3A1209281000	EPA 200.8	ICPM/35561	EPA 200.8	ICPM/14013
60130225001	DR3A1209281000	EPA 200.8	MPRP/19761	EPA 200.8	ICPM/1672
60130225005	DR3A1209281800	EPA 200.8	ICPM/35561	EPA 200.8	ICPM/14013
60130225005	DR3A1209281800	EPA 200.8	MPRP/19761	EPA 200.8	ICPM/1672
60130226001	DR3A1209290200	EPA 200.8	ICPM/35561	EPA 200.8	ICPM/14013
60130226001	DR3A1209290200	EPA 200.8	MPRP/19761	EPA 200.8	ICPM/1672
60130226005	DR3A1209291000	EPA 200.8	ICPM/35561	EPA 200.8	ICPM/14013
60130226005	DR3A1209291000	EPA 200.8	MPRP/19761	EPA 200.8	ICPM/1672
60130227001	DR3A1209291800	EPA 200.8	ICPM/35561	EPA 200.8	ICPM/14013
60130227001	DR3A1209291800	EPA 200.8	MPRP/19761	EPA 200.8	ICPM/1672
60130227005	DR3A1209300200	EPA 200.8	ICPM/35561	EPA 200.8	ICPM/14013
60130227005	DR3A1209300200	EPA 200.8	MPRP/19761	EPA 200.8	ICPM/1672
60130227009	DR3A1209301200	EPA 200.8	ICPM/35561	EPA 200.8	ICPM/14013
60130227009	DR3A1209301200	EPA 200.8	MPRP/19761	EPA 200.8	ICPM/1672

Date: 10/11/2012 06:01 PM

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130225

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60130227012	DR3A1209301800	EPA 200.8	ICPM/35561	EPA 200.8	ICPM/14013
60130227012	DR3A1209301800	EPA 200.8	MPRP/19761	EPA 200.8	ICPM/1672
60130227016	DR3A1210010200	EPA 200.8	ICPM/35561	EPA 200.8	ICPM/14013
60130227016	DR3A1210010200	EPA 200.8	MPRP/19761	EPA 200.8	ICPM/1672
60130225001	DR3A1209281000	SM 2320B	WET/37472		
60130225005	DR3A1209281800	SM 2320B	WET/37472		
60130226001	DR3A1209290200	SM 2320B	WET/37472		
60130226005	DR3A1209291000	SM 2320B	WET/37472		
60130227001	DR3A1209291800	SM 2320B	WET/37472		
60130227005	DR3A1209300200	SM 2320B	WET/37472		
60130227009	DR3A1209301200	SM 2320B	WET/37472		
60130227012	DR3A1209301800	SM 2320B	WET/37472		
60130227016	DR3A1210010200	SM 2320B	WET/37472		
60130225001	DR3A1209281000	EPA 300.0	WETA/21871		
60130225005	DR3A1209281800	EPA 300.0	WETA/21871		
60130226001	DR3A1209290200	EPA 300.0	WETA/21871		
60130226005	DR3A1209291000	EPA 300.0	WETA/21871		
60130227001	DR3A1209291800	EPA 300.0	WETA/21871		
60130227005	DR3A1209300200	EPA 300.0	WETA/21871		
60130227009	DR3A1209301200	EPA 300.0	WETA/21871		
60130227012	DR3A1209301800	EPA 300.0	WETA/21871		
60130227016	DR3A1210010200	EPA 300.0	WETA/21871		

October 11, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO-ARGENTINE MINE SITE
Pace Project No.: 60130313

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on October 03, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 09, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130313

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: Pace
Florida/NELAP Certification #: E87605
Georgia Certification #: 959
Hawaii Certification #Pace
Idaho Certification #: MN00064
Illinois Certification #: 200011
Kansas Certification #: E-10167
Louisiana Certification #: 03086
Louisiana Certification #: LA080009
Maine Certification #: 2007029
Maryland Certification #: 322
Michigan DEQ Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace

Montana Certification #: MT CERT0092
Nebraska Certification #: Pace
Nevada Certification #: MN_00064
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Dakota Certification #: R-036
North Dakota Certification #: R-036A
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Tennessee Certification #: 02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia/DCLS Certification #: 002521
Virginia/VELAP Certification #: 460163
Washington Certification #: C754
West Virginia Certification #: 382
Wisconsin Certification #: 999407970

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
A2LA Certification #: 2456.01
Arkansas Certification #: 12-019-0
Illinois Certification #: 002885
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-12-3
Utah Certification #: KS000212012-2

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SAMPLE SUMMARY

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130313

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60130313001	DR3A1210011000	Water	10/01/12 10:00	10/03/12 10:30
60130313005	DR3A1210011800	Water	10/01/12 18:00	10/03/12 10:30
60130313009	DR3A1210020200	Water	10/02/12 02:00	10/03/12 10:30
60130313010	DR3A1210020400	Water	10/02/12 04:00	10/03/12 10:30
60130313013	DR3A1210021000	Water	10/02/12 10:00	10/03/12 10:30

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SAMPLE ANALYTE COUNT

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130313

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60130313001	DR3A1210011000	EPA 200.7	SMW, TDS	5	PASI-K
		EPA 200.7	JGP	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	RJS	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60130313005	DR3A1210011800	EPA 200.7	SMW, TDS	5	PASI-K
		EPA 200.7	JGP	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	RJS	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60130313009	DR3A1210020200	EPA 200.7	SMW, TDS	5	PASI-K
		EPA 200.7	JGP	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	RJS	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60130313010	DR3A1210020400	EPA 200.7	SMW, TDS	5	PASI-K
		EPA 200.7	JGP	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	RJS	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60130313013	DR3A1210021000	EPA 200.7	SMW, TDS	5	PASI-K
		EPA 200.7	JGP	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	RJS	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130313

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: October 11, 2012

General Information:

5 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19792

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60130286001,60130313001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1072774)
 - Calcium
- MSD (Lab ID: 1072775)
 - Calcium

Additional Comments:

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130313

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: October 11, 2012

General Information:

5 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19785

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60130261001,60130313001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1072433)
 - Calcium, Dissolved
- MS (Lab ID: 1072435)
 - Calcium, Dissolved
 - Sodium, Dissolved
- MSD (Lab ID: 1072434)
 - Calcium, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130313

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: October 11, 2012

General Information:

5 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19793

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60130313001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1072813)
 - Manganese
 - Zinc
- MSD (Lab ID: 1072814)
 - Manganese
 - Zinc

Additional Comments:

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130313

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: October 11, 2012

Analyte Comments:

QC Batch: MPRP/19793

B: Analyte was detected in the associated method blank.

- DR3A1210011000 (Lab ID: 60130313001)
 - Arsenic
 - Cadmium
 - Cobalt
 - Lead
 - Zinc
- DR3A1210011800 (Lab ID: 60130313005)
 - Arsenic
 - Cadmium
 - Cobalt
 - Lead
 - Zinc
- DR3A1210020200 (Lab ID: 60130313009)
 - Arsenic
 - Cadmium
 - Cobalt
 - Lead
 - Zinc
- DR3A1210020400 (Lab ID: 60130313010)
 - Arsenic
 - Cadmium
 - Cobalt
 - Lead
 - Zinc
- DR3A1210021000 (Lab ID: 60130313013)
 - Arsenic
 - Cadmium
 - Cobalt
 - Lead
 - Zinc
- DR3A1210011800 (Lab ID: 60130313005)
 - Cobalt

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130313

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: October 11, 2012

General Information:

5 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19794

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60130313001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1072838)
 - Manganese, Dissolved
 - Zinc, Dissolved
- MSD (Lab ID: 1072839)
 - Manganese, Dissolved
 - Zinc, Dissolved

Additional Comments:

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130313

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: October 11, 2012

Analyte Comments:

QC Batch: MPRP/19794

B: Analyte was detected in the associated method blank.

- DR3A1210011000 (Lab ID: 60130313001)
 - Arsenic, Dissolved
 - Cadmium, Dissolved
 - Cobalt, Dissolved
 - Chromium, Dissolved
 - Manganese, Dissolved
 - Nickel, Dissolved
 - Lead, Dissolved
 - Zinc, Dissolved
- DR3A1210011800 (Lab ID: 60130313005)
 - Arsenic, Dissolved
 - Cadmium, Dissolved
 - Cobalt, Dissolved
 - Chromium, Dissolved
 - Manganese, Dissolved
 - Nickel, Dissolved
 - Lead, Dissolved
 - Zinc, Dissolved
- DR3A1210020200 (Lab ID: 60130313009)
 - Arsenic, Dissolved
 - Cadmium, Dissolved
 - Cobalt, Dissolved
 - Chromium, Dissolved
 - Manganese, Dissolved
 - Nickel, Dissolved
 - Lead, Dissolved
 - Zinc, Dissolved
- DR3A1210020400 (Lab ID: 60130313010)
 - Arsenic, Dissolved
 - Cadmium, Dissolved
 - Cobalt, Dissolved
 - Chromium, Dissolved
 - Manganese, Dissolved
 - Nickel, Dissolved
 - Lead, Dissolved
 - Zinc, Dissolved
- DR3A1210021000 (Lab ID: 60130313013)
 - Arsenic, Dissolved
 - Cadmium, Dissolved
 - Cobalt, Dissolved
 - Chromium, Dissolved
 - Manganese, Dissolved
 - Nickel, Dissolved

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130313

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: October 11, 2012

Analyte Comments:

QC Batch: MPRP/19794

B: Analyte was detected in the associated method blank.

- DR3A1210021000 (Lab ID: 60130313013)
 - Lead, Dissolved
 - Zinc, Dissolved

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130313

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: October 11, 2012

General Information:

5 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE
Pace Project No.: 60130313

Method: EPA 300.0
Description: 300.0 IC Anions 28 Days
Client: BP AMEC
Date: October 11, 2012

General Information:

5 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130313

Sample: DR3A1210011000 Lab ID: 60130313001 Collected: 10/01/12 10:00 Received: 10/03/12 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	239000	ug/L	100	35.8	1	10/04/12 11:30	10/07/12 15:24	7440-70-2	M1
Iron	3770	ug/L	50.0	17.2	1	10/04/12 11:30	10/07/12 15:24	7439-89-6	
Magnesium	19800	ug/L	50.0	17.2	1	10/04/12 11:30	10/07/12 15:24	7439-95-4	
Potassium	11800	ug/L	500	64.1	1	10/04/12 11:30	10/07/12 15:24	7440-09-7	
Sodium	12200	ug/L	500	40.1	1	10/04/12 11:30	10/07/12 15:58	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	228000	ug/L	100	35.8	1	10/03/12 17:45	10/04/12 16:01	7440-70-2	M1
Iron, Dissolved	51.1	ug/L	50.0	17.2	1	10/03/12 17:45	10/04/12 16:01	7439-89-6	
Magnesium, Dissolved	20100	ug/L	50.0	17.2	1	10/03/12 17:45	10/04/12 16:01	7439-95-4	D9
Potassium, Dissolved	12800	ug/L	500	64.1	1	10/03/12 17:45	10/04/12 16:01	7440-09-7	D9
Sodium, Dissolved	11700	ug/L	500	40.1	1	10/03/12 17:45	10/04/12 16:01	7440-23-5	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.71J	ug/L	1.0	0.14	1	10/04/12 11:30	10/08/12 12:16	7440-38-2	B
Cadmium	19.2	ug/L	0.50	0.097	1	10/04/12 11:30	10/08/12 12:16	7440-43-9	B
Chromium	0.58J	ug/L	1.0	0.11	1	10/04/12 11:30	10/08/12 12:16	7440-47-3	
Cobalt	3.0	ug/L	1.0	0.048	1	10/04/12 11:30	10/08/12 12:16	7440-48-4	B
Copper	37.1	ug/L	1.0	0.45	1	10/04/12 11:30	10/08/12 12:16	7440-50-8	
Lead	1.8	ug/L	1.0	0.051	1	10/04/12 11:30	10/08/12 12:16	7439-92-1	B
Manganese	1850	ug/L	1.0	0.23	1	10/04/12 11:30	10/08/12 12:16	7439-96-5	M1
Nickel	4.3	ug/L	1.0	0.35	1	10/04/12 11:30	10/08/12 12:16	7440-02-0	
Selenium	ND	ug/L	1.0	0.35	1	10/04/12 11:30	10/08/12 12:16	7782-49-2	
Zinc	3630	ug/L	10.0	1.6	1	10/04/12 11:30	10/08/12 12:16	7440-66-6	B,M1
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	60.0	ug/L	2.5	0.56	5	10/05/12 18:51	10/10/12 04:01	7439-93-2	
Arsenic, Dissolved	0.40J	ug/L	1.0	0.14	1	10/04/12 11:30	10/08/12 10:52	7440-38-2	B
Cadmium, Dissolved	18.6	ug/L	0.50	0.097	1	10/04/12 11:30	10/08/12 10:52	7440-43-9	B
Chromium, Dissolved	0.76J	ug/L	1.0	0.11	1	10/04/12 11:30	10/08/12 10:52	7440-47-3	B
Cobalt, Dissolved	3.0	ug/L	1.0	0.048	1	10/04/12 11:30	10/08/12 10:52	7440-48-4	B,D9
Copper, Dissolved	3.9	ug/L	1.0	0.45	1	10/04/12 11:30	10/08/12 10:52	7440-50-8	
Lead, Dissolved	0.37J	ug/L	1.0	0.051	1	10/04/12 11:30	10/08/12 10:52	7439-92-1	B
Manganese, Dissolved	1960	ug/L	1.0	0.23	1	10/04/12 11:30	10/08/12 10:52	7439-96-5	B,D9, M1
Nickel, Dissolved	3.4	ug/L	1.0	0.35	1	10/04/12 11:30	10/08/12 10:52	7440-02-0	B
Selenium, Dissolved	ND	ug/L	1.0	0.35	1	10/04/12 11:30	10/08/12 10:52	7782-49-2	
Zinc, Dissolved	3620	ug/L	10.0	1.6	1	10/04/12 11:30	10/08/12 10:52	7440-66-6	B,M1
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	94.5	mg/L	20.0	1.2	1		10/04/12 08:11		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/04/12 08:11		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/04/12 08:11		
Alkalinity, Total as CaCO3	94.5	mg/L	20.0	1.2	1		10/04/12 08:11		

Date: 10/11/2012 03:12 PM

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ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130313

Sample: DR3A1210011000		Lab ID: 60130313001		Collected: 10/01/12 10:00		Received: 10/03/12 10:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.12J	mg/L	1.0	0.078	1		10/04/12 13:31	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		10/04/12 13:31	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/04/12 13:31	16984-48-8	
Sulfate	647	mg/L	100	12.0	100		10/04/12 13:47	14808-79-8	

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130313

Sample: DR3A1210011800 Lab ID: 60130313005 Collected: 10/01/12 18:00 Received: 10/03/12 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	232000	ug/L	100	35.8	1	10/04/12 11:30	10/07/12 15:30	7440-70-2	
Iron	3110	ug/L	50.0	17.2	1	10/04/12 11:30	10/07/12 15:30	7439-89-6	
Magnesium	19000	ug/L	50.0	17.2	1	10/04/12 11:30	10/07/12 15:30	7439-95-4	
Potassium	12000	ug/L	500	64.1	1	10/04/12 11:30	10/07/12 15:30	7440-09-7	
Sodium	12000	ug/L	500	40.1	1	10/04/12 11:30	10/07/12 16:04	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	229000	ug/L	100	35.8	1	10/03/12 17:45	10/04/12 16:14	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	17.2	1	10/03/12 17:45	10/04/12 16:14	7439-89-6	
Magnesium, Dissolved	20600	ug/L	50.0	17.2	1	10/03/12 17:45	10/04/12 16:14	7439-95-4	D9
Potassium, Dissolved	13500	ug/L	500	64.1	1	10/03/12 17:45	10/04/12 16:14	7440-09-7	D9
Sodium, Dissolved	11800	ug/L	500	40.1	1	10/03/12 17:45	10/04/12 16:14	7440-23-5	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.68J	ug/L	1.0	0.14	1	10/04/12 11:30	10/08/12 12:32	7440-38-2	B
Cadmium	21.3	ug/L	0.50	0.097	1	10/04/12 11:30	10/08/12 12:32	7440-43-9	B
Chromium	0.42J	ug/L	1.0	0.11	1	10/04/12 11:30	10/08/12 12:32	7440-47-3	
Cobalt	3.2	ug/L	1.0	0.048	1	10/04/12 11:30	10/08/12 12:32	7440-48-4	B
Copper	36.5	ug/L	1.0	0.45	1	10/04/12 11:30	10/08/12 12:32	7440-50-8	
Lead	1.6	ug/L	1.0	0.051	1	10/04/12 11:30	10/08/12 12:32	7439-92-1	B
Manganese	2010	ug/L	1.0	0.23	1	10/04/12 11:30	10/08/12 12:32	7439-96-5	
Nickel	4.4	ug/L	1.0	0.35	1	10/04/12 11:30	10/08/12 12:32	7440-02-0	
Selenium	ND	ug/L	1.0	0.35	1	10/04/12 11:30	10/08/12 12:32	7782-49-2	
Zinc	4000	ug/L	10.0	1.6	1	10/04/12 11:30	10/08/12 12:32	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	59.8	ug/L	2.5	0.56	5	10/05/12 18:51	10/10/12 02:52	7439-93-2	
Arsenic, Dissolved	0.56J	ug/L	1.0	0.14	1	10/04/12 11:30	10/08/12 11:08	7440-38-2	B
Cadmium, Dissolved	20.5	ug/L	0.50	0.097	1	10/04/12 11:30	10/08/12 11:08	7440-43-9	B
Chromium, Dissolved	0.66J	ug/L	1.0	0.11	1	10/04/12 11:30	10/08/12 11:08	7440-47-3	B
Cobalt, Dissolved	3.3	ug/L	1.0	0.048	1	10/04/12 11:30	10/08/12 11:08	7440-48-4	B,D9
Copper, Dissolved	3.7	ug/L	1.0	0.45	1	10/04/12 11:30	10/08/12 11:08	7440-50-8	
Lead, Dissolved	0.34J	ug/L	1.0	0.051	1	10/04/12 11:30	10/08/12 11:08	7439-92-1	B
Manganese, Dissolved	2160	ug/L	1.0	0.23	1	10/04/12 11:30	10/08/12 11:08	7439-96-5	B,D9
Nickel, Dissolved	4.0	ug/L	1.0	0.35	1	10/04/12 11:30	10/08/12 11:08	7440-02-0	B
Selenium, Dissolved	ND	ug/L	1.0	0.35	1	10/04/12 11:30	10/08/12 11:08	7782-49-2	
Zinc, Dissolved	3930	ug/L	10.0	1.6	1	10/04/12 11:30	10/08/12 11:08	7440-66-6	B
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	94.9	mg/L	20.0	1.2	1		10/04/12 08:19		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/04/12 08:19		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/04/12 08:19		
Alkalinity, Total as CaCO3	94.9	mg/L	20.0	1.2	1		10/04/12 08:19		

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130313

Sample: DR3A1210011800		Lab ID: 60130313005		Collected: 10/01/12 18:00		Received: 10/03/12 10:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.24J	mg/L	1.0	0.078	1		10/04/12 15:37	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		10/04/12 15:37	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/04/12 15:37	16984-48-8	
Sulfate	642	mg/L	100	12.0	100		10/04/12 15:53	14808-79-8	

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130313

Sample: DR3A1210020200 Lab ID: 60130313009 Collected: 10/02/12 02:00 Received: 10/03/12 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	232000	ug/L	100	35.8	1	10/04/12 11:30	10/07/12 15:54	7440-70-2	
Iron	3350	ug/L	50.0	17.2	1	10/04/12 11:30	10/07/12 15:54	7439-89-6	
Magnesium	19100	ug/L	50.0	17.2	1	10/04/12 11:30	10/07/12 15:54	7439-95-4	
Potassium	12400	ug/L	500	64.1	1	10/04/12 11:30	10/07/12 15:54	7440-09-7	
Sodium	11800	ug/L	500	40.1	1	10/04/12 11:30	10/07/12 16:12	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	223000	ug/L	100	35.8	1	10/03/12 17:45	10/04/12 16:18	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	17.2	1	10/03/12 17:45	10/04/12 16:18	7439-89-6	
Magnesium, Dissolved	19800	ug/L	50.0	17.2	1	10/03/12 17:45	10/04/12 16:18	7439-95-4	D9
Potassium, Dissolved	13900	ug/L	500	64.1	1	10/03/12 17:45	10/04/12 16:18	7440-09-7	D9
Sodium, Dissolved	11600	ug/L	500	40.1	1	10/03/12 17:45	10/04/12 16:18	7440-23-5	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.71J	ug/L	1.0	0.14	1	10/04/12 11:30	10/08/12 12:36	7440-38-2	B
Cadmium	21.0	ug/L	0.50	0.097	1	10/04/12 11:30	10/08/12 12:36	7440-43-9	B
Chromium	0.34J	ug/L	1.0	0.11	1	10/04/12 11:30	10/08/12 12:36	7440-47-3	
Cobalt	3.3	ug/L	1.0	0.048	1	10/04/12 11:30	10/08/12 12:36	7440-48-4	B
Copper	39.1	ug/L	1.0	0.45	1	10/04/12 11:30	10/08/12 12:36	7440-50-8	
Lead	1.7	ug/L	1.0	0.051	1	10/04/12 11:30	10/08/12 12:36	7439-92-1	B
Manganese	1980	ug/L	1.0	0.23	1	10/04/12 11:30	10/08/12 12:36	7439-96-5	
Nickel	4.1	ug/L	1.0	0.35	1	10/04/12 11:30	10/08/12 12:36	7440-02-0	
Selenium	ND	ug/L	1.0	0.35	1	10/04/12 11:30	10/08/12 12:36	7782-49-2	
Zinc	4050	ug/L	10.0	1.6	1	10/04/12 11:30	10/08/12 12:36	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	61.6	ug/L	2.5	0.56	5	10/05/12 18:51	10/10/12 02:56	7439-93-2	
Arsenic, Dissolved	0.49J	ug/L	1.0	0.14	1	10/04/12 11:30	10/08/12 11:12	7440-38-2	B
Cadmium, Dissolved	20.1	ug/L	0.50	0.097	1	10/04/12 11:30	10/08/12 11:12	7440-43-9	B
Chromium, Dissolved	0.56J	ug/L	1.0	0.11	1	10/04/12 11:30	10/08/12 11:12	7440-47-3	B
Cobalt, Dissolved	3.3	ug/L	1.0	0.048	1	10/04/12 11:30	10/08/12 11:12	7440-48-4	B,D9
Copper, Dissolved	3.7	ug/L	1.0	0.45	1	10/04/12 11:30	10/08/12 11:12	7440-50-8	
Lead, Dissolved	0.34J	ug/L	1.0	0.051	1	10/04/12 11:30	10/08/12 11:12	7439-92-1	B
Manganese, Dissolved	2110	ug/L	1.0	0.23	1	10/04/12 11:30	10/08/12 11:12	7439-96-5	B,D9
Nickel, Dissolved	4.0	ug/L	1.0	0.35	1	10/04/12 11:30	10/08/12 11:12	7440-02-0	B
Selenium, Dissolved	ND	ug/L	1.0	0.35	1	10/04/12 11:30	10/08/12 11:12	7782-49-2	
Zinc, Dissolved	3920	ug/L	10.0	1.6	1	10/04/12 11:30	10/08/12 11:12	7440-66-6	B
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	95.4	mg/L	20.0	1.2	1		10/04/12 08:23		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/04/12 08:23		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/04/12 08:23		
Alkalinity, Total as CaCO3	95.4	mg/L	20.0	1.2	1		10/04/12 08:23		

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130313

Sample: DR3A1210020200		Lab ID: 60130313009	Collected: 10/02/12 02:00	Received: 10/03/12 10:30	Matrix: Water				
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.13J	mg/L	1.0	0.078	1		10/04/12 16:08	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		10/04/12 16:08	16887-00-6	
Fluoride	2.1	mg/L	0.20	0.011	1		10/04/12 16:08	16984-48-8	
Sulfate	647	mg/L	100	12.0	100		10/04/12 16:24	14808-79-8	

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130313

Sample: DR3A1210020400 Lab ID: 60130313010 Collected: 10/02/12 04:00 Received: 10/03/12 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	228000	ug/L	100	35.8	1	10/04/12 11:30	10/07/12 15:34	7440-70-2	
Iron	3580	ug/L	50.0	17.2	1	10/04/12 11:30	10/07/12 15:34	7439-89-6	
Magnesium	18900	ug/L	50.0	17.2	1	10/04/12 11:30	10/07/12 15:34	7439-95-4	
Potassium	12400	ug/L	500	64.1	1	10/04/12 11:30	10/07/12 15:34	7440-09-7	
Sodium	11700	ug/L	500	40.1	1	10/04/12 11:30	10/07/12 16:14	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	225000	ug/L	100	35.8	1	10/03/12 17:45	10/04/12 16:21	7440-70-2	
Iron, Dissolved	19.4J	ug/L	50.0	17.2	1	10/03/12 17:45	10/04/12 16:21	7439-89-6	
Magnesium, Dissolved	19500	ug/L	50.0	17.2	1	10/03/12 17:45	10/04/12 16:21	7439-95-4	D9
Potassium, Dissolved	13900	ug/L	500	64.1	1	10/03/12 17:45	10/04/12 16:21	7440-09-7	D9
Sodium, Dissolved	11600	ug/L	500	40.1	1	10/03/12 17:45	10/04/12 16:21	7440-23-5	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.70J	ug/L	1.0	0.14	1	10/04/12 11:30	10/08/12 12:40	7440-38-2	B
Cadmium	20.6	ug/L	0.50	0.097	1	10/04/12 11:30	10/08/12 12:40	7440-43-9	B
Chromium	0.62J	ug/L	1.0	0.11	1	10/04/12 11:30	10/08/12 12:40	7440-47-3	
Cobalt	3.1	ug/L	1.0	0.048	1	10/04/12 11:30	10/08/12 12:40	7440-48-4	B
Copper	40.9	ug/L	1.0	0.45	1	10/04/12 11:30	10/08/12 12:40	7440-50-8	
Lead	1.8	ug/L	1.0	0.051	1	10/04/12 11:30	10/08/12 12:40	7439-92-1	B
Manganese	1930	ug/L	1.0	0.23	1	10/04/12 11:30	10/08/12 12:40	7439-96-5	
Nickel	4.4	ug/L	1.0	0.35	1	10/04/12 11:30	10/08/12 12:40	7440-02-0	
Selenium	ND	ug/L	1.0	0.35	1	10/04/12 11:30	10/08/12 12:40	7782-49-2	
Zinc	3920	ug/L	10.0	1.6	1	10/04/12 11:30	10/08/12 12:40	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	63.8	ug/L	2.5	0.56	5	10/05/12 18:51	10/10/12 03:30	7439-93-2	
Arsenic, Dissolved	0.51J	ug/L	1.0	0.14	1	10/04/12 11:30	10/08/12 11:16	7440-38-2	B
Cadmium, Dissolved	20.0	ug/L	0.50	0.097	1	10/04/12 11:30	10/08/12 11:16	7440-43-9	B
Chromium, Dissolved	0.50J	ug/L	1.0	0.11	1	10/04/12 11:30	10/08/12 11:16	7440-47-3	B
Cobalt, Dissolved	3.1	ug/L	1.0	0.048	1	10/04/12 11:30	10/08/12 11:16	7440-48-4	B
Copper, Dissolved	3.8	ug/L	1.0	0.45	1	10/04/12 11:30	10/08/12 11:16	7440-50-8	
Lead, Dissolved	0.34J	ug/L	1.0	0.051	1	10/04/12 11:30	10/08/12 11:16	7439-92-1	B
Manganese, Dissolved	2090	ug/L	1.0	0.23	1	10/04/12 11:30	10/08/12 11:16	7439-96-5	B,D9
Nickel, Dissolved	3.9	ug/L	1.0	0.35	1	10/04/12 11:30	10/08/12 11:16	7440-02-0	B
Selenium, Dissolved	ND	ug/L	1.0	0.35	1	10/04/12 11:30	10/08/12 11:16	7782-49-2	
Zinc, Dissolved	3800	ug/L	10.0	1.6	1	10/04/12 11:30	10/08/12 11:16	7440-66-6	B
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	98.4	mg/L	20.0	1.2	1		10/04/12 08:27		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/04/12 08:27		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/04/12 08:27		
Alkalinity, Total as CaCO3	98.4	mg/L	20.0	1.2	1		10/04/12 08:27		

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130313

Sample: DR3A1210020400		Lab ID: 60130313010		Collected: 10/02/12 04:00		Received: 10/03/12 10:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.14J	mg/L	1.0	0.078	1		10/04/12 16:40	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		10/04/12 16:40	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/04/12 16:40	16984-48-8	
Sulfate	650	mg/L	100	12.0	100		10/04/12 16:55	14808-79-8	

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130313

Sample: DR3A1210021000 Lab ID: 60130313013 Collected: 10/02/12 10:00 Received: 10/03/12 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	230000	ug/L	100	35.8	1	10/04/12 11:30	10/07/12 15:37	7440-70-2	
Iron	3700	ug/L	50.0	17.2	1	10/04/12 11:30	10/07/12 15:37	7439-89-6	
Magnesium	19100	ug/L	50.0	17.2	1	10/04/12 11:30	10/07/12 15:37	7439-95-4	
Potassium	13000	ug/L	500	64.1	1	10/04/12 11:30	10/07/12 15:37	7440-09-7	
Sodium	11800	ug/L	500	40.1	1	10/04/12 11:30	10/07/12 16:16	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	221000	ug/L	100	35.8	1	10/03/12 17:45	10/04/12 16:31	7440-70-2	
Iron, Dissolved	326	ug/L	50.0	17.2	1	10/03/12 17:45	10/04/12 16:31	7439-89-6	
Magnesium, Dissolved	19500	ug/L	50.0	17.2	1	10/03/12 17:45	10/04/12 16:31	7439-95-4	D9
Potassium, Dissolved	14200	ug/L	500	64.1	1	10/03/12 17:45	10/04/12 16:31	7440-09-7	D9
Sodium, Dissolved	11300	ug/L	500	40.1	1	10/03/12 17:45	10/04/12 16:31	7440-23-5	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.72J	ug/L	1.0	0.14	1	10/04/12 11:30	10/08/12 12:53	7440-38-2	B
Cadmium	20.9	ug/L	0.50	0.097	1	10/04/12 11:30	10/08/12 12:53	7440-43-9	B
Chromium	0.57J	ug/L	1.0	0.11	1	10/04/12 11:30	10/08/12 12:53	7440-47-3	
Cobalt	3.2	ug/L	1.0	0.048	1	10/04/12 11:30	10/08/12 12:53	7440-48-4	B
Copper	41.2	ug/L	1.0	0.45	1	10/04/12 11:30	10/08/12 12:53	7440-50-8	
Lead	1.9	ug/L	1.0	0.051	1	10/04/12 11:30	10/08/12 12:53	7439-92-1	B
Manganese	1960	ug/L	1.0	0.23	1	10/04/12 11:30	10/08/12 12:53	7439-96-5	
Nickel	4.1	ug/L	1.0	0.35	1	10/04/12 11:30	10/08/12 12:53	7440-02-0	
Selenium	ND	ug/L	1.0	0.35	1	10/04/12 11:30	10/08/12 12:53	7782-49-2	
Zinc	3980	ug/L	10.0	1.6	1	10/04/12 11:30	10/08/12 12:53	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	66.2	ug/L	2.5	0.56	5	10/05/12 18:51	10/10/12 04:15	7439-93-2	
Arsenic, Dissolved	0.47J	ug/L	1.0	0.14	1	10/04/12 11:30	10/08/12 11:20	7440-38-2	B
Cadmium, Dissolved	19.8	ug/L	0.50	0.097	1	10/04/12 11:30	10/08/12 11:20	7440-43-9	B
Chromium, Dissolved	1.2	ug/L	1.0	0.11	1	10/04/12 11:30	10/08/12 11:20	7440-47-3	B,D9
Cobalt, Dissolved	3.2	ug/L	1.0	0.048	1	10/04/12 11:30	10/08/12 11:20	7440-48-4	B,D9
Copper, Dissolved	5.1	ug/L	1.0	0.45	1	10/04/12 11:30	10/08/12 11:20	7440-50-8	
Lead, Dissolved	0.36J	ug/L	1.0	0.051	1	10/04/12 11:30	10/08/12 11:20	7439-92-1	B
Manganese, Dissolved	2050	ug/L	1.0	0.23	1	10/04/12 11:30	10/08/12 11:20	7439-96-5	B,D9
Nickel, Dissolved	4.3	ug/L	1.0	0.35	1	10/04/12 11:30	10/08/12 11:20	7440-02-0	B,D9
Selenium, Dissolved	ND	ug/L	1.0	0.35	1	10/04/12 11:30	10/08/12 11:20	7782-49-2	
Zinc, Dissolved	3820	ug/L	10.0	1.6	1	10/04/12 11:30	10/08/12 11:20	7440-66-6	B
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	97.2	mg/L	20.0	1.2	1		10/04/12 08:31		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/04/12 08:31		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/04/12 08:31		
Alkalinity, Total as CaCO3	97.2	mg/L	20.0	1.2	1		10/04/12 08:31		

Date: 10/11/2012 03:12 PM

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130313

Sample: DR3A1210021000		Lab ID: 60130313013		Collected: 10/02/12 10:00		Received: 10/03/12 10:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.13J	mg/L	1.0	0.078	1		10/04/12 17:42	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		10/04/12 17:42	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/04/12 17:42	16984-48-8	
Sulfate	648	mg/L	100	12.0	100		10/04/12 17:58	14808-79-8	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130313

QC Batch: ICPM/35561 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60130313001, 60130313005, 60130313009, 60130313010, 60130313013

METHOD BLANK: 1303090 Matrix: Water
Associated Lab Samples: 60130313001, 60130313005, 60130313009, 60130313010, 60130313013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lithium, Dissolved	ug/L	ND	0.50	10/10/12 03:10	

LABORATORY CONTROL SAMPLE: 1303091

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lithium, Dissolved	ug/L	80	77.8	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1303092 1303093

Parameter	Units	10207602001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lithium, Dissolved	ug/L	4.2	80	80	84.7	80.4	101	95	70-130	5	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1303094 1303095

Parameter	Units	60130313001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lithium, Dissolved	ug/L	60.0	80	80	139	144	98	106	70-130	4	20	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130313

QC Batch: MPRP/19792 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60130313001, 60130313005, 60130313009, 60130313010, 60130313013

METHOD BLANK: 1072772 Matrix: Water

Associated Lab Samples: 60130313001, 60130313005, 60130313009, 60130313010, 60130313013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	ug/L	ND	100	10/06/12 11:01	
Iron	ug/L	ND	50.0	10/06/12 11:01	
Magnesium	ug/L	ND	50.0	10/06/12 11:01	
Potassium	ug/L	ND	500	10/06/12 11:01	
Sodium	ug/L	ND	500	10/06/12 11:01	

LABORATORY CONTROL SAMPLE: 1072773

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	10100	101	85-115	
Iron	ug/L	10000	10300	103	85-115	
Magnesium	ug/L	10000	10300	103	85-115	
Potassium	ug/L	10000	10500	105	85-115	
Sodium	ug/L	10000	10600	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1072774 1072775

Parameter	Units	60130313001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	239000	10000	10000	240000	232000	10	-71	70-130	3	9 M1	
Iron	ug/L	3770	10000	10000	13200	12700	94	89	70-130	4	10	
Magnesium	ug/L	19800	10000	10000	28500	27800	87	80	70-130	3	9	
Potassium	ug/L	11800	10000	10000	21300	20600	96	89	70-130	3	7	
Sodium	ug/L	12200	10000	10000	23100	22700	110	105	70-130	2	8	

MATRIX SPIKE SAMPLE: 1072776

Parameter	Units	60130286001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	86300	10000	96800	104	70-130	
Iron	ug/L	ND	10000	10300	103	70-130	
Magnesium	ug/L	56600	10000	67400	108	70-130	
Potassium	ug/L	4020	10000	14600	106	70-130	
Sodium	ug/L	26800	10000	37500	107	70-130	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130313

QC Batch:	MPRP/19785	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Dissolved
Associated Lab Samples:	60130313001, 60130313005, 60130313009, 60130313010, 60130313013		

METHOD BLANK: 1072431 Matrix: Water

Associated Lab Samples: 60130313001, 60130313005, 60130313009, 60130313010, 60130313013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	10/04/12 15:51	
Iron, Dissolved	ug/L	ND	50.0	10/04/12 15:51	
Magnesium, Dissolved	ug/L	ND	50.0	10/04/12 15:51	
Potassium, Dissolved	ug/L	ND	500	10/04/12 15:51	
Sodium, Dissolved	ug/L	ND	500	10/04/12 15:51	

LABORATORY CONTROL SAMPLE: 1072432

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9600	96	85-115	
Iron, Dissolved	ug/L	10000	9580	96	85-115	
Magnesium, Dissolved	ug/L	10000	10500	105	85-115	
Potassium, Dissolved	ug/L	10000	10700	107	85-115	
Sodium, Dissolved	ug/L	10000	10700	107	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1072433 1072434

Parameter	Units	60130313001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium, Dissolved	ug/L	228000	10000	10000	225000	230000	-31	13	70-130	2	9 M1	
Iron, Dissolved	ug/L	51.1	10000	10000	9240	9370	92	93	70-130	1	10	
Magnesium, Dissolved	ug/L	20100	10000	10000	28800	29300	87	92	70-130	2	9	
Potassium, Dissolved	ug/L	12800	10000	10000	22800	23200	100	105	70-130	2	7	
Sodium, Dissolved	ug/L	11700	10000	10000	21500	22000	98	103	70-130	2	8	

MATRIX SPIKE SAMPLE: 1072435

Parameter	Units	60130261001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	345000	10000	361000	161	70-130	M1
Iron, Dissolved	ug/L	ND	10000	8830	88	70-130	
Magnesium, Dissolved	ug/L	142000	10000	152000	94	70-130	
Potassium, Dissolved	ug/L	5620	10000	16300	107	70-130	
Sodium, Dissolved	ug/L	153000	10000	159000	58	70-130	M1

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130313

QC Batch: MPRP/19793 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60130313001, 60130313005, 60130313009, 60130313010, 60130313013

METHOD BLANK: 1072811 Matrix: Water
Associated Lab Samples: 60130313001, 60130313005, 60130313009, 60130313010, 60130313013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	0.15J	1.0	10/08/12 12:04	
Cadmium	ug/L	0.16J	0.50	10/08/12 12:04	
Chromium	ug/L	ND	1.0	10/08/12 12:04	
Cobalt	ug/L	0.19J	1.0	10/08/12 12:04	
Copper	ug/L	ND	1.0	10/08/12 12:04	
Lead	ug/L	0.33J	1.0	10/08/12 12:04	
Manganese	ug/L	ND	1.0	10/08/12 12:04	
Nickel	ug/L	ND	1.0	10/08/12 12:04	
Selenium	ug/L	ND	1.0	10/08/12 12:04	
Zinc	ug/L	4.2J	10.0	10/08/12 12:04	

LABORATORY CONTROL SAMPLE: 1072812

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	40.7	102	85-115	
Cadmium	ug/L	40	41.9	105	85-115	
Chromium	ug/L	40	42.4	106	85-115	
Cobalt	ug/L	40	41.5	104	85-115	
Copper	ug/L	40	42.1	105	85-115	
Lead	ug/L	40	41.6	104	85-115	
Manganese	ug/L	40	42.4	106	85-115	
Nickel	ug/L	40	41.4	104	85-115	
Selenium	ug/L	40	41.2	103	85-115	
Zinc	ug/L	100	111	111	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1072813 1072814

Parameter	Units	60130313001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	0.71J	40	40	42.8	41.6	105	102	70-130	3	20	
Cadmium	ug/L	19.2	40	40	62.9	64.4	109	113	70-130	2	20	
Chromium	ug/L	0.58J	40	40	41.0	40.3	101	99	70-130	2	20	
Cobalt	ug/L	3.0	40	40	44.5	44.7	104	104	70-130	0	20	
Copper	ug/L	37.1	40	40	82.8	81.8	114	112	70-130	1	20	
Lead	ug/L	1.8	40	40	44.5	44.2	107	106	70-130	1	20	
Manganese	ug/L	1850	40	40	2080	2040	575	470	70-130	2	20 M1	
Nickel	ug/L	4.3	40	40	44.6	44.8	101	101	70-130	1	20	
Selenium	ug/L	ND	40	40	42.1	40.1	105	100	70-130	5	20	
Zinc	ug/L	3630	100	100	4180	4100	551	478	70-130	2	20 M1	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130313

QC Batch: MPRP/19794 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60130313001, 60130313005, 60130313009, 60130313010, 60130313013

METHOD BLANK: 1072836 Matrix: Water
Associated Lab Samples: 60130313001, 60130313005, 60130313009, 60130313010, 60130313013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	0.17J	1.0	10/08/12 10:43	
Cadmium, Dissolved	ug/L	0.16J	0.50	10/08/12 10:43	
Chromium, Dissolved	ug/L	0.32J	1.0	10/08/12 10:43	
Cobalt, Dissolved	ug/L	0.19J	1.0	10/08/12 10:43	
Copper, Dissolved	ug/L	ND	1.0	10/08/12 10:43	
Lead, Dissolved	ug/L	0.34J	1.0	10/08/12 10:43	
Manganese, Dissolved	ug/L	0.36J	1.0	10/08/12 10:43	
Nickel, Dissolved	ug/L	0.46J	1.0	10/08/12 10:43	
Selenium, Dissolved	ug/L	ND	1.0	10/08/12 10:43	
Zinc, Dissolved	ug/L	3.2J	10.0	10/08/12 10:43	

LABORATORY CONTROL SAMPLE: 1072837

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	41.0	102	85-115	
Cadmium, Dissolved	ug/L	40	40.5	101	85-115	
Chromium, Dissolved	ug/L	40	41.4	103	85-115	
Cobalt, Dissolved	ug/L	40	40.6	101	85-115	
Copper, Dissolved	ug/L	40	40.4	101	85-115	
Lead, Dissolved	ug/L	40	40.5	101	85-115	
Manganese, Dissolved	ug/L	40	41.2	103	85-115	
Nickel, Dissolved	ug/L	40	41.0	103	85-115	
Selenium, Dissolved	ug/L	40	40.3	101	85-115	
Zinc, Dissolved	ug/L	100	109	109	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1072838 1072839

Parameter	Units	60130313001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	0.40J	40	40	41.8	42.6	103	106	70-130	2	20	
Cadmium, Dissolved	ug/L	18.6	40	40	60.2	61.4	104	107	70-130	2	20	
Chromium, Dissolved	ug/L	0.76J	40	40	42.0	43.1	103	106	70-130	3	20	
Cobalt, Dissolved	ug/L	3.0	40	40	42.9	44.3	100	103	70-130	3	20	
Copper, Dissolved	ug/L	3.9	40	40	43.3	45.0	99	103	70-130	4	20	
Lead, Dissolved	ug/L	0.37J	40	40	40.6	41.7	101	103	70-130	3	20	
Manganese, Dissolved	ug/L	1960	40	40	2140	2100	425	348	70-130	1	20 M1	
Nickel, Dissolved	ug/L	3.4	40	40	43.0	44.0	99	102	70-130	2	20	
Selenium, Dissolved	ug/L	ND	40	40	40.9	40.9	102	102	70-130	0	20	
Zinc, Dissolved	ug/L	3620	100	100	3990	3920	369	296	70-130	2	20 M1	

Date: 10/11/2012 03:12 PM

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130313

QC Batch: WET/37488 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60130313001, 60130313005, 60130313009, 60130313010, 60130313013

METHOD BLANK: 1072576 Matrix: Water

Associated Lab Samples: 60130313001, 60130313005, 60130313009, 60130313010, 60130313013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	10/04/12 08:01	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	10/04/12 08:01	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	10/04/12 08:01	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	10/04/12 08:01	

LABORATORY CONTROL SAMPLE: 1072577

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	488	98	90-110	

SAMPLE DUPLICATE: 1072578

Parameter	Units	60130313001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	94.5	96.5	2	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	94.5	96.5	2	9	

SAMPLE DUPLICATE: 1072579

Parameter	Units	60130223003 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	78.6	77.5	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	78.6	77.5	1	9	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Project No.: 60130313

QC Batch: WETA/21889 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60130313001, 60130313005, 60130313009, 60130313010, 60130313013

METHOD BLANK: 1072652 Matrix: Water
Associated Lab Samples: 60130313001, 60130313005, 60130313009, 60130313010, 60130313013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	10/04/12 12:44	
Chloride	mg/L	ND	1.0	10/04/12 12:44	
Fluoride	mg/L	ND	0.20	10/04/12 12:44	
Sulfate	mg/L	ND	1.0	10/04/12 12:44	

LABORATORY CONTROL SAMPLE: 1072653

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.9	97	90-110	
Chloride	mg/L	5	4.6	91	90-110	
Fluoride	mg/L	2.5	2.4	97	90-110	
Sulfate	mg/L	5	5.0	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1072654 1072655

Parameter	Units	60130313001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	0.12J	5	5	5.3	5.4	104	105	75-119	1	10	
Chloride	mg/L	ND	5	5	5.4	5.4	103	104	64-118	1	12	
Fluoride	mg/L	2.2	2.5	2.5	4.8	4.8	105	105	75-110	0	10	
Sulfate	mg/L	647	500	500	1130	1130	96	97	61-119	0	10	

QUALIFIERS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130313

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

PASI-M Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130313

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60130313001	DR3A1210011000	EPA 200.7	MPRP/19792	EPA 200.7	ICP/16296
60130313005	DR3A1210011800	EPA 200.7	MPRP/19792	EPA 200.7	ICP/16296
60130313009	DR3A1210020200	EPA 200.7	MPRP/19792	EPA 200.7	ICP/16296
60130313010	DR3A1210020400	EPA 200.7	MPRP/19792	EPA 200.7	ICP/16296
60130313013	DR3A1210021000	EPA 200.7	MPRP/19792	EPA 200.7	ICP/16296
60130313001	DR3A1210011000	EPA 200.7	MPRP/19785	EPA 200.7	ICP/16290
60130313005	DR3A1210011800	EPA 200.7	MPRP/19785	EPA 200.7	ICP/16290
60130313009	DR3A1210020200	EPA 200.7	MPRP/19785	EPA 200.7	ICP/16290
60130313010	DR3A1210020400	EPA 200.7	MPRP/19785	EPA 200.7	ICP/16290
60130313013	DR3A1210021000	EPA 200.7	MPRP/19785	EPA 200.7	ICP/16290
60130313001	DR3A1210011000	EPA 200.8	MPRP/19793	EPA 200.8	ICPM/1679
60130313005	DR3A1210011800	EPA 200.8	MPRP/19793	EPA 200.8	ICPM/1679
60130313009	DR3A1210020200	EPA 200.8	MPRP/19793	EPA 200.8	ICPM/1679
60130313010	DR3A1210020400	EPA 200.8	MPRP/19793	EPA 200.8	ICPM/1679
60130313013	DR3A1210021000	EPA 200.8	MPRP/19793	EPA 200.8	ICPM/1679
60130313001	DR3A1210011000	EPA 200.8	ICPM/35561	EPA 200.8	ICPM/14013
60130313001	DR3A1210011000	EPA 200.8	MPRP/19794	EPA 200.8	ICPM/1680
60130313005	DR3A1210011800	EPA 200.8	ICPM/35561	EPA 200.8	ICPM/14013
60130313005	DR3A1210011800	EPA 200.8	MPRP/19794	EPA 200.8	ICPM/1680
60130313009	DR3A1210020200	EPA 200.8	ICPM/35561	EPA 200.8	ICPM/14013
60130313009	DR3A1210020200	EPA 200.8	MPRP/19794	EPA 200.8	ICPM/1680
60130313010	DR3A1210020400	EPA 200.8	ICPM/35561	EPA 200.8	ICPM/14013
60130313010	DR3A1210020400	EPA 200.8	MPRP/19794	EPA 200.8	ICPM/1680
60130313013	DR3A1210021000	EPA 200.8	ICPM/35561	EPA 200.8	ICPM/14013
60130313013	DR3A1210021000	EPA 200.8	MPRP/19794	EPA 200.8	ICPM/1680
60130313001	DR3A1210011000	SM 2320B	WET/37488		
60130313005	DR3A1210011800	SM 2320B	WET/37488		
60130313009	DR3A1210020200	SM 2320B	WET/37488		
60130313010	DR3A1210020400	SM 2320B	WET/37488		
60130313013	DR3A1210021000	SM 2320B	WET/37488		
60130313001	DR3A1210011000	EPA 300.0	WETA/21889		
60130313005	DR3A1210011800	EPA 300.0	WETA/21889		
60130313009	DR3A1210020200	EPA 300.0	WETA/21889		
60130313010	DR3A1210020400	EPA 300.0	WETA/21889		
60130313013	DR3A1210021000	EPA 300.0	WETA/21889		



Laboratory Management Program LaMP Chain of Custody Record

Page 1 of 2BP/ARC Project Name: Rico-Argentine Mine SiteReq Due Date (mm/dd/yy): _____ Rush TAT: Yes ___ No X

BP/ARC Facility No: _____

Lab Work Order Number: _____

Lab Name: Pace Analytical Laboratories, Inc.	BP/ARC Facility Address: Rico-Argentine Mine	Consultant/Contractor: AMEC E&I, Inc.
Lab Address: 9608 Loiret Blvd., Lenexa, KS 66219	City, State, ZIP Code: Rico, Colorado	Consultant/Contractor Project No: SA11161302.200B
Lab PM: Heather Wilson	Lead Regulatory Agency: U.S. EPA Region 8	Address: 10670 White Rock Road, Suite 100, Rancho Cordova, CA
Lab Phone: (913) 563-1407	California Global ID No.: NA	Consultant/Contractor PM: Marc Lombardi
Lab Shipping Acct: UPS # 733W87	Enfos Proposal No: D009D-0024 (WR 251660)	Phone: 916-636-3200
Lab Bottle Order No: NA	Accounting Mode: Provision <u>X</u> OOC-BU ___ OOC-RM ___	Email Report/EDD To: lynda.lombardi@amec.com
Other Info: 517 Injection Treatability Study	Stage: 4-Execute Activity: Spend	Invoice To: BP/ARC <u>X</u> Contractor ___

BP/ARC EBM: Anthony Brown	Matrix	No. Containers / Preservative	Requested Analyses	Report Type & QC Level
EBM Phone: 714-228-6770				Standard <u>X</u>
EBM Email: anthony.brown@bp.com				Full Data Package ___

Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Tot Metals-see notes (E200.7/200.8)	Dis Metals-see notes (E200.7/200.8)	Alkalinity-Total, HCO ₃ , CO ₃ , OH (SM2320B)	Sulfate (E300.0)	Chloride (E300.0)	Bromide (E300.0)	Fluoride (E300.0)	Dissolved Lithium (E200.7)	MS/MSD	HOLD	Comments	
	DR3A1210011000 28P24	10/01/2012	10:00		X		4	1		3		X	X	X	X	X	X	X	X	X			Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.
	DR3A1210011000 MS	10/01/2012	10:00		X		4	1		3		X	X	X	X	X	X	X	X	X			Dissolved metals are field filtered.
	DR3A1210011200	10/01/2012	12:00		X		4	1		3		X	X	X	X	X	X	X	X	X			Metals are: Ca, Fe, K, Na, Mg
	DR3A1210011400	10/01/2012	14:00		X		4	1		3		X	X	X	X	X	X	X	X	X			(E200.7); As, Cd, Co, Cr, Cu, Mn, Ni, Pb
	DR3A1210011600	10/1/12	16:00		X		4	1		3		X	X	X	X	X	X	X	X	X			Pb, Se, Zn (E200.8)
	DR3A1210011800	10/1/12	18:00		X		4	1		3		X	X	X	X	X	X	X	X	X			
	DR3A1210012000	10/1/12	20:00		X		4	1		3		X	X	X	X	X	X	X	X	X			*48-hr turn-around time
	DR3A1210012200	10/1/12	22:00		X		4	1		3		X	X	X	X	X	X	X	X	X			
	DR3A1210020000	10/2/12	00:00		X		4	1		3		X	X	X	X	X	X	X	X	X			
	DR3A1210020200	10/2/12	02:00		X		4	1		3		X	X	X	X	X	X	X	X	X			

Sampler's Name: <u>Hallie Bevan Simpson</u>	Relinquished By / Affiliation: <u>AMEC</u>	Date: <u>10/2/12</u>	Time: <u>1330</u>	Accepted By / Affiliation: <u>Berrell</u>	Date: <u>10-3-12</u>	Time: <u>1030</u>
Sampler's Company: <u>AMEC</u>						
Shipment Method: <u>UPS</u>	Ship Date: <u>10/02/2012</u>					
Shipment Tracking No: <u>1Z733W3722100560329</u>						

Special Instructions:	THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No	Temp Blank: Yes / No	Cooler Temp on Receipt: <u>3.7</u> , <u>4.1</u> °F/C	Trip Blank: Yes / No	MS/MSD Sample Submitted: Yes / No
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Sample Condition Upon Receipt – ESI Tech Specs

Client Name: BP Amec

Project #: 00130313/00130314

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 12733w 972210056029

Pace Shipping Label Used? Yes ☒ No ☐

Optional

Proj Due Date: 10/05

Proj Name:

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☒ 2PLC

Thermometer Used: T-191 / T-194

Type of Ice: Wet Blue None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 3.7, 4.1

Date and initials of person examining contents: 10-3-12 BA

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7. <u>48 hr</u>
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13. <u>One sample received is not on COC. 014</u> <u>ID: DR3A1210021200 (10/2/12 1200).</u>
-Includes date/time/ID/analyses Matrix:		
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State: <u>h</u>

Client Notification/ Resolution:

Copy COC to Client? Y / N

Field Data Required? Y / N

Person Contacted: Lynda Lombardi Date/Time: 10/3/12

Comments/ Resolution: Please see attached amended COC

Amw 10/3/12

Project Manager Review: Amw

Date: 10/3/12

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: 1200 Start:

End: 1220 End:

Temp: Temp:

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the NCDENR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

October 19, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO-ARGENTINE MINE SITE
Pace Project No.: 60130421

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on October 04, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130421

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: Pace
Florida/NELAP Certification #: E87605
Georgia Certification #: 959
Hawaii Certification #Pace
Idaho Certification #: MN00064
Illinois Certification #: 200011
Kansas Certification #: E-10167
Louisiana Certification #: 03086
Louisiana Certification #: LA080009
Maine Certification #: 2007029
Maryland Certification #: 322
Michigan DEQ Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace

Montana Certification #: MT CERT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Dakota Certification #: R-036
North Dakota Certification #: R-036A
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Tennessee Certification #: 02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia/DCLS Certification #: 002521
Virginia/VELAP Certification #: 460163
Washington Certification #: C754
West Virginia Certification #: 382
Wisconsin Certification #: 999407970

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
A2LA Certification #: 2456.01
Arkansas Certification #: 12-019-0
Illinois Certification #: 002885
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-12-3
Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130421

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60130421003	DR3A1210021800	Water	10/02/12 18:00	10/04/12 10:00
60130421007	DR3A1210030200	Water	10/03/12 02:00	10/04/12 10:00
60130421011	DR3A1210031000	Water	10/03/12 10:00	10/04/12 10:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130421

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60130421003	DR3A1210021800	EPA 200.7	SMW, TDS	5	PASI-K
		EPA 200.7	SMW, TDS	5	PASI-K
		EPA 200.8	JGP, SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	RJS	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60130421007	DR3A1210030200	EPA 200.7	SMW, TDS	5	PASI-K
		EPA 200.7	SMW, TDS	5	PASI-K
		EPA 200.8	JGP, SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	RJS	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60130421011	DR3A1210031000	EPA 200.7	SMW, TDS	5	PASI-K
		EPA 200.7	SMW, TDS	5	PASI-K
		EPA 200.8	JGP, SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	RJS	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130421

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: October 19, 2012

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19802

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60130403005,60130421003

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1073017)
 - Calcium
- MSD (Lab ID: 1073018)
 - Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130421

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: October 19, 2012

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19811

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60130421003

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1073338)
 - Calcium, Dissolved
- MSD (Lab ID: 1073339)
 - Calcium, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130421

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: October 19, 2012

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19814

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60130421007

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1073363)
 - Manganese
 - Zinc
- MSD (Lab ID: 1073364)
 - Manganese
 - Zinc

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130421

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: October 19, 2012

Analyte Comments:

QC Batch: MPRP/19814

B: Analyte was detected in the associated method blank.

- DR3A1210021800 (Lab ID: 60130421003)
 - Chromium
 - Zinc
- DR3A1210030200 (Lab ID: 60130421007)
 - Chromium
 - Zinc
- DR3A1210031000 (Lab ID: 60130421011)
 - Chromium
 - Zinc

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210021800 (Lab ID: 60130421003)
 - Arsenic
 - Selenium
- DR3A1210030200 (Lab ID: 60130421007)
 - Arsenic
 - Selenium
- DR3A1210031000 (Lab ID: 60130421011)
 - Arsenic
 - Lead
 - Selenium

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130421

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: October 19, 2012

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19812

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60130421007

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1073346)
 - Zinc, Dissolved
- MSD (Lab ID: 1073347)
 - Manganese, Dissolved
 - Zinc, Dissolved

Additional Comments:

Analyte Comments:

QC Batch: MPRP/19812

B: Analyte was detected in the associated method blank.

- DR3A1210021800 (Lab ID: 60130421003)
 - Lead, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130421

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: October 19, 2012

Analyte Comments:

QC Batch: MPRP/19812

B: Analyte was detected in the associated method blank.

- DR3A1210021800 (Lab ID: 60130421003)
 - Zinc, Dissolved
 - Manganese, Dissolved
- DR3A1210030200 (Lab ID: 60130421007)
 - Manganese, Dissolved
 - Lead, Dissolved
 - Zinc, Dissolved
- DR3A1210031000 (Lab ID: 60130421011)
 - Manganese, Dissolved
 - Lead, Dissolved
 - Zinc, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130421

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: October 19, 2012

General Information:

3 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130421

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: October 19, 2012

General Information:

3 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130421

Sample: DR3A1210021800 Lab ID: 60130421003 Collected: 10/02/12 18:00 Received: 10/04/12 10:00 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	223000	ug/L	100	35.8	1	10/04/12 12:30	10/07/12 16:47	7440-70-2	M1
Iron	3560	ug/L	50.0	17.2	1	10/04/12 12:30	10/07/12 16:47	7439-89-6	
Magnesium	18600	ug/L	50.0	17.2	1	10/04/12 12:30	10/07/12 16:47	7439-95-4	
Potassium	13200	ug/L	500	64.1	1	10/04/12 12:30	10/07/12 16:47	7440-09-7	
Sodium	11400	ug/L	500	40.1	1	10/04/12 12:30	10/07/12 16:47	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	231000	ug/L	100	35.8	1	10/04/12 18:15	10/07/12 17:07	7440-70-2	D9,M1
Iron, Dissolved	ND	ug/L	50.0	17.2	1	10/04/12 18:15	10/07/12 17:07	7439-89-6	
Magnesium, Dissolved	19800	ug/L	50.0	17.2	1	10/04/12 18:15	10/07/12 17:07	7439-95-4	D9
Potassium, Dissolved	13600	ug/L	500	64.1	1	10/04/12 18:15	10/07/12 17:07	7440-09-7	D9
Sodium, Dissolved	11900	ug/L	500	40.1	1	10/04/12 18:15	10/07/12 17:02	7440-23-5	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	ND	ug/L	10.0	1.4	10	10/04/12 18:15	10/16/12 13:55	7440-38-2	D3
Cadmium	16.1	ug/L	0.50	0.097	1	10/04/12 18:15	10/09/12 11:19	7440-43-9	
Chromium	0.48J	ug/L	1.0	0.11	1	10/04/12 18:15	10/09/12 11:19	7440-47-3	B
Cobalt	2.7	ug/L	1.0	0.048	1	10/04/12 18:15	10/09/12 11:19	7440-48-4	
Copper	38.1	ug/L	1.0	0.45	1	10/04/12 18:15	10/09/12 11:19	7440-50-8	
Lead	1.5J	ug/L	10.0	0.51	10	10/04/12 18:15	10/16/12 13:55	7439-92-1	
Manganese	1830	ug/L	1.0	0.23	1	10/04/12 18:15	10/09/12 11:19	7439-96-5	
Nickel	3.0	ug/L	1.0	0.35	1	10/04/12 18:15	10/09/12 11:19	7440-02-0	
Selenium	ND	ug/L	10.0	3.5	10	10/04/12 18:15	10/16/12 13:55	7782-49-2	D3
Zinc	3650	ug/L	10.0	1.6	1	10/04/12 18:15	10/09/12 11:19	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	68.3	ug/L	2.5	0.56	5	10/14/12 08:27	10/16/12 16:51	7439-93-2	
Arsenic, Dissolved	0.44J	ug/L	1.0	0.14	1	10/04/12 18:15	10/09/12 16:15	7440-38-2	
Cadmium, Dissolved	18.3	ug/L	0.50	0.097	1	10/04/12 18:15	10/09/12 10:51	7440-43-9	D9
Chromium, Dissolved	0.41J	ug/L	1.0	0.11	1	10/04/12 18:15	10/09/12 10:51	7440-47-3	
Cobalt, Dissolved	3.0	ug/L	1.0	0.048	1	10/04/12 18:15	10/09/12 10:51	7440-48-4	D9
Copper, Dissolved	3.1	ug/L	1.0	0.45	1	10/04/12 18:15	10/09/12 10:51	7440-50-8	
Lead, Dissolved	0.074J	ug/L	1.0	0.051	1	10/04/12 18:15	10/09/12 16:15	7439-92-1	B
Manganese, Dissolved	2020	ug/L	1.0	0.23	1	10/04/12 18:15	10/09/12 10:51	7439-96-5	B,D9
Nickel, Dissolved	2.8	ug/L	1.0	0.35	1	10/04/12 18:15	10/09/12 10:51	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.35	1	10/04/12 18:15	10/09/12 16:15	7782-49-2	
Zinc, Dissolved	3420	ug/L	10.0	1.6	1	10/04/12 18:15	10/09/12 10:51	7440-66-6	B
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	98.1	mg/L	20.0	1.2	1		10/08/12 13:44		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/08/12 13:44		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/08/12 13:44		
Alkalinity, Total as CaCO3	98.1	mg/L	20.0	1.2	1		10/08/12 13:44		

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130421

Sample: DR3A1210021800		Lab ID: 60130421003		Collected: 10/02/12 18:00		Received: 10/04/12 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.13J	mg/L	1.0	0.078	1		10/04/12 20:42	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		10/04/12 20:42	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/04/12 20:42	16984-48-8	
Sulfate	651	mg/L	100	12.0	100		10/04/12 20:58	14808-79-8	

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130421

Sample: DR3A1210030200 Lab ID: 60130421007 Collected: 10/03/12 02:00 Received: 10/04/12 10:00 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	230000	ug/L	100	35.8	1	10/04/12 12:30	10/07/12 16:57	7440-70-2	
Iron	3550	ug/L	50.0	17.2	1	10/04/12 12:30	10/07/12 16:57	7439-89-6	
Magnesium	19400	ug/L	50.0	17.2	1	10/04/12 12:30	10/07/12 16:57	7439-95-4	
Potassium	13900	ug/L	500	64.1	1	10/04/12 12:30	10/07/12 16:57	7440-09-7	
Sodium	11700	ug/L	500	40.1	1	10/04/12 12:30	10/07/12 16:49	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	226000	ug/L	100	35.8	1	10/04/12 18:15	10/07/12 17:24	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	17.2	1	10/04/12 18:15	10/07/12 17:24	7439-89-6	
Magnesium, Dissolved	18700	ug/L	50.0	17.2	1	10/04/12 18:15	10/07/12 17:24	7439-95-4	
Potassium, Dissolved	14000	ug/L	500	64.1	1	10/04/12 18:15	10/07/12 17:24	7440-09-7	D9
Sodium, Dissolved	12000	ug/L	500	40.1	1	10/04/12 18:15	10/07/12 17:08	7440-23-5	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	ND	ug/L	10.0	1.4	10	10/04/12 18:15	10/16/12 13:58	7440-38-2	D3
Cadmium	17.7	ug/L	0.50	0.097	1	10/04/12 18:15	10/09/12 11:44	7440-43-9	
Chromium	0.42J	ug/L	1.0	0.11	1	10/04/12 18:15	10/09/12 11:44	7440-47-3	B
Cobalt	2.9	ug/L	1.0	0.048	1	10/04/12 18:15	10/09/12 11:44	7440-48-4	
Copper	39.3	ug/L	1.0	0.45	1	10/04/12 18:15	10/09/12 11:44	7440-50-8	
Lead	1.6J	ug/L	10.0	0.51	10	10/04/12 18:15	10/16/12 13:58	7439-92-1	
Manganese	1950	ug/L	1.0	0.23	1	10/04/12 18:15	10/09/12 11:44	7439-96-5	D9
Nickel	3.6	ug/L	1.0	0.35	1	10/04/12 18:15	10/09/12 11:44	7440-02-0	
Selenium	ND	ug/L	10.0	3.5	10	10/04/12 18:15	10/16/12 13:58	7782-49-2	D3
Zinc	4060	ug/L	10.0	1.6	1	10/04/12 18:15	10/09/12 11:44	7440-66-6	B,M1
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	72.6	ug/L	2.5	0.56	5	10/14/12 08:27	10/16/12 17:06	7439-93-2	
Arsenic, Dissolved	0.40J	ug/L	1.0	0.14	1	10/04/12 18:15	10/09/12 16:27	7440-38-2	
Cadmium, Dissolved	17.9	ug/L	0.50	0.097	1	10/04/12 18:15	10/09/12 11:03	7440-43-9	D9
Chromium, Dissolved	0.35J	ug/L	1.0	0.11	1	10/04/12 18:15	10/09/12 11:03	7440-47-3	
Cobalt, Dissolved	2.9	ug/L	1.0	0.048	1	10/04/12 18:15	10/09/12 11:03	7440-48-4	
Copper, Dissolved	3.2	ug/L	1.0	0.45	1	10/04/12 18:15	10/09/12 11:03	7440-50-8	
Lead, Dissolved	0.083J	ug/L	1.0	0.051	1	10/04/12 18:15	10/09/12 16:27	7439-92-1	B
Manganese, Dissolved	2020	ug/L	1.0	0.23	1	10/04/12 18:15	10/09/12 11:03	7439-96-5	B,D9, M1
Nickel, Dissolved	3.0	ug/L	1.0	0.35	1	10/04/12 18:15	10/09/12 11:03	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.35	1	10/04/12 18:15	10/09/12 16:27	7782-49-2	
Zinc, Dissolved	3710	ug/L	10.0	1.6	1	10/04/12 18:15	10/09/12 11:03	7440-66-6	B,M1
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	95.3	mg/L	20.0	1.2	1		10/08/12 13:52		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/08/12 13:52		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/08/12 13:52		
Alkalinity, Total as CaCO3	95.3	mg/L	20.0	1.2	1		10/08/12 13:52		

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130421

Sample: DR3A1210030200		Lab ID: 60130421007		Collected: 10/03/12 02:00		Received: 10/04/12 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.14J	mg/L	1.0	0.078	1		10/04/12 22:48	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		10/04/12 22:48	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/04/12 22:48	16984-48-8	
Sulfate	642	mg/L	100	12.0	100		10/04/12 23:04	14808-79-8	

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130421

Sample: DR3A1210031000 Lab ID: 60130421011 Collected: 10/03/12 10:00 Received: 10/04/12 10:00 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	236000	ug/L	100	35.8	1	10/04/12 12:30	10/07/12 17:00	7440-70-2	
Iron	4020	ug/L	50.0	17.2	1	10/04/12 12:30	10/07/12 17:00	7439-89-6	
Magnesium	20000	ug/L	50.0	17.2	1	10/04/12 12:30	10/07/12 17:00	7439-95-4	
Potassium	14600	ug/L	500	64.1	1	10/04/12 12:30	10/07/12 17:00	7440-09-7	
Sodium	12100	ug/L	500	40.1	1	10/04/12 12:30	10/07/12 16:56	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	223000	ug/L	100	35.8	1	10/04/12 18:15	10/07/12 17:27	7440-70-2	
Iron, Dissolved	548	ug/L	50.0	17.2	1	10/04/12 18:15	10/07/12 17:27	7439-89-6	
Magnesium, Dissolved	18800	ug/L	50.0	17.2	1	10/04/12 18:15	10/07/12 17:27	7439-95-4	
Potassium, Dissolved	13800	ug/L	500	64.1	1	10/04/12 18:15	10/07/12 17:27	7440-09-7	
Sodium, Dissolved	11800	ug/L	500	40.1	1	10/04/12 18:15	10/07/12 17:10	7440-23-5	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	ND	ug/L	10.0	1.4	10	10/04/12 18:15	10/16/12 14:10	7440-38-2	D3
Cadmium	20.0	ug/L	5.0	0.97	10	10/04/12 18:15	10/16/12 15:42	7440-43-9	
Chromium	0.47J	ug/L	1.0	0.11	1	10/04/12 18:15	10/09/12 11:52	7440-47-3	B
Cobalt	3.1	ug/L	1.0	0.048	1	10/04/12 18:15	10/09/12 11:52	7440-48-4	
Copper	43.5	ug/L	1.0	0.45	1	10/04/12 18:15	10/09/12 11:52	7440-50-8	
Lead	1.6J	ug/L	10.0	0.51	10	10/04/12 18:15	10/16/12 14:10	7439-92-1	D3
Manganese	1970	ug/L	1.0	0.23	1	10/04/12 18:15	10/09/12 11:52	7439-96-5	
Nickel	3.6	ug/L	1.0	0.35	1	10/04/12 18:15	10/09/12 11:52	7440-02-0	
Selenium	ND	ug/L	10.0	3.5	10	10/04/12 18:15	10/16/12 14:10	7782-49-2	D3
Zinc	4210	ug/L	10.0	1.6	1	10/04/12 18:15	10/09/12 11:52	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	73.4	ug/L	2.5	0.56	5	10/14/12 08:27	10/16/12 17:11	7439-93-2	
Arsenic, Dissolved	0.44J	ug/L	1.0	0.14	1	10/04/12 18:15	10/09/12 16:37	7440-38-2	
Cadmium, Dissolved	18.1	ug/L	0.50	0.097	1	10/04/12 18:15	10/09/12 11:11	7440-43-9	
Chromium, Dissolved	0.45J	ug/L	1.0	0.11	1	10/04/12 18:15	10/09/12 11:11	7440-47-3	
Cobalt, Dissolved	3.0	ug/L	1.0	0.048	1	10/04/12 18:15	10/09/12 11:11	7440-48-4	
Copper, Dissolved	5.3	ug/L	1.0	0.45	1	10/04/12 18:15	10/09/12 11:11	7440-50-8	
Lead, Dissolved	0.070J	ug/L	1.0	0.051	1	10/04/12 18:15	10/09/12 16:37	7439-92-1	B
Manganese, Dissolved	2010	ug/L	1.0	0.23	1	10/04/12 18:15	10/09/12 11:11	7439-96-5	B,D9
Nickel, Dissolved	3.3	ug/L	1.0	0.35	1	10/04/12 18:15	10/09/12 11:11	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.35	1	10/04/12 18:15	10/09/12 16:37	7782-49-2	
Zinc, Dissolved	3920	ug/L	10.0	1.6	1	10/04/12 18:15	10/09/12 11:11	7440-66-6	B
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	95.9	mg/L	20.0	1.2	1		10/08/12 13:57		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/08/12 13:57		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/08/12 13:57		
Alkalinity, Total as CaCO3	95.9	mg/L	20.0	1.2	1		10/08/12 13:57		

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130421

Sample: DR3A1210031000		Lab ID: 60130421011		Collected: 10/03/12 10:00		Received: 10/04/12 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.14J	mg/L	1.0	0.078	1		10/04/12 23:19	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		10/04/12 23:19	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/04/12 23:19	16984-48-8	
Sulfate	644	mg/L	100	12.0	100		10/04/12 23:35	14808-79-8	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130421

QC Batch: ICPM/35696 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60130421003, 60130421007, 60130421011

METHOD BLANK: 1308801 Matrix: Water

Associated Lab Samples: 60130421003, 60130421007, 60130421011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lithium, Dissolved	ug/L	ND	0.50	10/16/12 16:37	

LABORATORY CONTROL SAMPLE: 1308802

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lithium, Dissolved	ug/L	80	83.5	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1308803 1308804

Parameter	Units	60130421003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lithium, Dissolved	ug/L	68.3	80	80	151	153	103	106	70-130	1	20	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130421

QC Batch: MPRP/19802 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60130421003, 60130421007, 60130421011

METHOD BLANK: 1073015 Matrix: Water

Associated Lab Samples: 60130421003, 60130421007, 60130421011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	ug/L	ND	100	10/07/12 16:14	
Iron	ug/L	ND	50.0	10/07/12 16:14	
Magnesium	ug/L	ND	50.0	10/07/12 16:14	
Potassium	ug/L	ND	500	10/07/12 16:14	
Sodium	ug/L	ND	500	10/07/12 16:22	

LABORATORY CONTROL SAMPLE: 1073016

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	9740	97	85-115	
Iron	ug/L	10000	9420	94	85-115	
Magnesium	ug/L	10000	9810	98	85-115	
Potassium	ug/L	10000	9280	93	85-115	
Sodium	ug/L	10000	10600	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1073017 1073018

Parameter	Units	60130421003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	223000	10000	10000	249000	236000	262	133	70-130	5	9 M1	
Iron	ug/L	3560	10000	10000	13700	12800	101	93	70-130	6	10	
Magnesium	ug/L	18600	10000	10000	28700	29000	101	104	70-130	1	9	
Potassium	ug/L	13200	10000	10000	24400	23000	112	98	70-130	6	7	
Sodium	ug/L	11400	10000	10000	23000	22800	116	114	70-130	1	8	

MATRIX SPIKE SAMPLE: 1073019

Parameter	Units	60130403005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	32000	10000	42800	108	70-130	
Iron	ug/L	319	10000	10200	99	70-130	
Magnesium	ug/L	18300	10000	28900	106	70-130	
Potassium	ug/L	739	10000	11000	103	70-130	
Sodium	ug/L	1940	10000	12600	106	70-130	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130421

QC Batch:	MPRP/19811	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Dissolved
Associated Lab Samples:	60130421003, 60130421007, 60130421011		

METHOD BLANK: 1073336 Matrix: Water

Associated Lab Samples: 60130421003, 60130421007, 60130421011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	10/07/12 16:37	
Iron, Dissolved	ug/L	ND	50.0	10/07/12 16:37	
Magnesium, Dissolved	ug/L	ND	50.0	10/07/12 16:37	
Potassium, Dissolved	ug/L	ND	500	10/07/12 16:37	
Sodium, Dissolved	ug/L	ND	500	10/07/12 16:43	

LABORATORY CONTROL SAMPLE: 1073337

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9860	99	85-115	
Iron, Dissolved	ug/L	10000	9600	96	85-115	
Magnesium, Dissolved	ug/L	10000	9950	99	85-115	
Potassium, Dissolved	ug/L	10000	9430	94	85-115	
Sodium, Dissolved	ug/L	10000	10900	109	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1073338 1073339

Parameter	Units	60130421003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium, Dissolved	ug/L	231000	10000	10000	233000	238000	19	61	70-130	2	9	M1
Iron, Dissolved	ug/L	ND	10000	10000	9120	9250	91	92	70-130	1	10	
Magnesium, Dissolved	ug/L	19800	10000	10000	28500	27900	86	81	70-130	2	9	
Potassium, Dissolved	ug/L	13600	10000	10000	22700	23000	91	94	70-130	1	7	
Sodium, Dissolved	ug/L	11900	10000	10000	22800	22900	108	110	70-130	1	8	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130421

QC Batch: MPRP/19814 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60130421003, 60130421007, 60130421011

METHOD BLANK: 1073361 Matrix: Water

Associated Lab Samples: 60130421003, 60130421007, 60130421011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	10/16/12 13:49	
Cadmium	ug/L	ND	0.50	10/09/12 11:31	
Chromium	ug/L	0.11J	1.0	10/09/12 11:31	
Cobalt	ug/L	ND	1.0	10/09/12 11:31	
Copper	ug/L	ND	1.0	10/09/12 11:31	
Lead	ug/L	ND	1.0	10/16/12 13:49	
Manganese	ug/L	ND	1.0	10/09/12 11:31	
Nickel	ug/L	ND	1.0	10/09/12 11:31	
Selenium	ug/L	ND	1.0	10/16/12 13:49	
Zinc	ug/L	5.8J	10.0	10/09/12 11:31	

LABORATORY CONTROL SAMPLE: 1073362

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	43.6	109	85-115	
Cadmium	ug/L	40	39.2	98	85-115	
Chromium	ug/L	40	43.2	108	85-115	
Cobalt	ug/L	40	41.5	104	85-115	
Copper	ug/L	40	42.7	107	85-115	
Lead	ug/L	40	42.5	106	85-115	
Manganese	ug/L	40	41.9	105	85-115	
Nickel	ug/L	40	41.9	105	85-115	
Selenium	ug/L	40	43.6	109	85-115	
Zinc	ug/L	100	112	112	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1073363 1073364

Parameter	Units	60130421007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	ND	40	40	42.8	44.0	106	108	70-130	3	20	
Cadmium	ug/L	17.7	40	40	53.4	53.5	89	90	70-130	0	20	
Chromium	ug/L	0.42J	40	40	41.6	42.0	103	104	70-130	1	20	
Cobalt	ug/L	2.9	40	40	42.2	42.7	98	100	70-130	1	20	
Copper	ug/L	39.3	40	40	76.8	78.2	94	97	70-130	2	20	
Lead	ug/L	1.6J	40	40	41.5	43.3	100	104	70-130	4	20	
Manganese	ug/L	1950	40	40	2010	2030	148	192	70-130	1	20 M1	
Nickel	ug/L	3.6	40	40	41.9	42.7	96	98	70-130	2	20	
Selenium	ug/L	ND	40	40	42.0	40.7	104	101	70-130	3	20	
Zinc	ug/L	4060	100	100	4020	4120	-39	69	70-130	3	20 M1	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130421

QC Batch: MPRP/19812 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60130421003, 60130421007, 60130421011

METHOD BLANK: 1073344 Matrix: Water

Associated Lab Samples: 60130421003, 60130421007, 60130421011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	10/09/12 16:07	
Cadmium, Dissolved	ug/L	ND	0.50	10/09/12 10:43	
Chromium, Dissolved	ug/L	ND	1.0	10/09/12 10:43	
Cobalt, Dissolved	ug/L	ND	1.0	10/09/12 10:43	
Copper, Dissolved	ug/L	ND	1.0	10/09/12 10:43	
Lead, Dissolved	ug/L	0.067J	1.0	10/09/12 16:07	
Manganese, Dissolved	ug/L	0.50J	1.0	10/09/12 10:43	
Nickel, Dissolved	ug/L	ND	1.0	10/09/12 10:43	
Selenium, Dissolved	ug/L	ND	1.0	10/09/12 16:07	
Zinc, Dissolved	ug/L	5.6J	10.0	10/09/12 10:43	

LABORATORY CONTROL SAMPLE: 1073345

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	40.3	101	85-115	
Cadmium, Dissolved	ug/L	40	40.2	101	85-115	
Chromium, Dissolved	ug/L	40	40.7	102	85-115	
Cobalt, Dissolved	ug/L	40	40.3	101	85-115	
Copper, Dissolved	ug/L	40	40.3	101	85-115	
Lead, Dissolved	ug/L	40	39.5	99	85-115	
Manganese, Dissolved	ug/L	40	40.7	102	85-115	
Nickel, Dissolved	ug/L	40	40.4	101	85-115	
Selenium, Dissolved	ug/L	40	39.4	98	85-115	
Zinc, Dissolved	ug/L	100	112	112	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1073346 1073347

Parameter	Units	60130421007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	0.40J	40	40	45.1	45.1	112	112	70-130	0	20	
Cadmium, Dissolved	ug/L	17.9	40	40	56.5	56.8	96	97	70-130	1	20	
Chromium, Dissolved	ug/L	0.35J	40	40	41.1	41.5	102	103	70-130	1	20	
Cobalt, Dissolved	ug/L	2.9	40	40	42.2	42.6	98	99	70-130	1	20	
Copper, Dissolved	ug/L	3.2	40	40	41.1	41.2	95	95	70-130	0	20	
Lead, Dissolved	ug/L	0.083J	40	40	36.6	36.3	91	91	70-130	1	20	
Manganese, Dissolved	ug/L	2020	40	40	2050	2080	88	155	70-130	1	20 M1	
Nickel, Dissolved	ug/L	3.0	40	40	40.7	41.9	94	97	70-130	3	20	
Selenium, Dissolved	ug/L	ND	40	40	37.0	36.8	92	92	70-130	1	20	
Zinc, Dissolved	ug/L	3710	100	100	3560	3730	-148	18	70-130	5	20 M1	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130421

QC Batch: WET/37538 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60130421003, 60130421007, 60130421011

METHOD BLANK: 1075380 Matrix: Water

Associated Lab Samples: 60130421003, 60130421007, 60130421011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	10/08/12 13:34	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	10/08/12 13:34	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	10/08/12 13:34	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	10/08/12 13:34	

LABORATORY CONTROL SAMPLE: 1075381

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	492	98	90-110	

SAMPLE DUPLICATE: 1075382

Parameter	Units	60130421003 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	98.1	97.0	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	98.1	97.0	1	9	

SAMPLE DUPLICATE: 1075383

Parameter	Units	60130571006 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	4.8J		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	59.1	61.0	3	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	53.2	56.3	6	9	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Project No.: 60130421

QC Batch:	WETA/21902	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
Associated Lab Samples:	60130421003, 60130421007, 60130421011		

METHOD BLANK: 1073565 Matrix: Water

Associated Lab Samples: 60130421003, 60130421007, 60130421011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	10/04/12 20:11	
Chloride	mg/L	ND	1.0	10/04/12 20:11	
Fluoride	mg/L	ND	0.20	10/04/12 20:11	
Sulfate	mg/L	ND	1.0	10/04/12 20:11	

LABORATORY CONTROL SAMPLE: 1073566

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.9	97	90-110	
Chloride	mg/L	5	4.5	91	90-110	
Fluoride	mg/L	2.5	2.4	96	90-110	
Sulfate	mg/L	5	5.0	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1073567 1073568

Parameter	Units	60130421003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	0.13J	5	5	5.3	5.3	104	104	75-119	0	10	
Chloride	mg/L	ND	5	5	5.5	5.5	102	102	64-118	0	12	
Fluoride	mg/L	2.2	2.5	2.5	4.8	4.8	104	105	75-110	0	10	
Sulfate	mg/L	651	500	500	1130	1120	96	95	61-119	1	10	

QUALIFIERS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130421

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

PASI-M Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130421

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60130421003	DR3A1210021800	EPA 200.7	MPRP/19802	EPA 200.7	ICP/16300
60130421007	DR3A1210030200	EPA 200.7	MPRP/19802	EPA 200.7	ICP/16300
60130421011	DR3A1210031000	EPA 200.7	MPRP/19802	EPA 200.7	ICP/16300
60130421003	DR3A1210021800	EPA 200.7	MPRP/19811	EPA 200.7	ICP/16303
60130421007	DR3A1210030200	EPA 200.7	MPRP/19811	EPA 200.7	ICP/16303
60130421011	DR3A1210031000	EPA 200.7	MPRP/19811	EPA 200.7	ICP/16303
60130421003	DR3A1210021800	EPA 200.8	MPRP/19814	EPA 200.8	ICPM/1684
60130421007	DR3A1210030200	EPA 200.8	MPRP/19814	EPA 200.8	ICPM/1684
60130421011	DR3A1210031000	EPA 200.8	MPRP/19814	EPA 200.8	ICPM/1684
60130421003	DR3A1210021800	EPA 200.8	ICPM/35696	EPA 200.8	ICPM/14117
60130421003	DR3A1210021800	EPA 200.8	MPRP/19812	EPA 200.8	ICPM/1683
60130421007	DR3A1210030200	EPA 200.8	ICPM/35696	EPA 200.8	ICPM/14117
60130421007	DR3A1210030200	EPA 200.8	MPRP/19812	EPA 200.8	ICPM/1683
60130421011	DR3A1210031000	EPA 200.8	ICPM/35696	EPA 200.8	ICPM/14117
60130421011	DR3A1210031000	EPA 200.8	MPRP/19812	EPA 200.8	ICPM/1683
60130421003	DR3A1210021800	SM 2320B	WET/37538		
60130421007	DR3A1210030200	SM 2320B	WET/37538		
60130421011	DR3A1210031000	SM 2320B	WET/37538		
60130421003	DR3A1210021800	EPA 300.0	WETA/21902		
60130421007	DR3A1210030200	EPA 300.0	WETA/21902		
60130421011	DR3A1210031000	EPA 300.0	WETA/21902		

October 15, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO-ARGENTINE MINE SITE
Pace Project No.: 60130556

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on October 05, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 09, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130556

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414

A2LA Certification #: 2926.01

Alaska Certification #: UST-078

Alaska Certification #MN00064

Arizona Certification #: AZ-0014

Arkansas Certification #: 88-0680

California Certification #: 01155CA

Colorado Certification #Pace

Connecticut Certification #: PH-0256

EPA Region 8 Certification #: Pace

Florida/NELAP Certification #: E87605

Georgia Certification #: 959

Hawaii Certification #Pace

Idaho Certification #: MN00064

Illinois Certification #: 200011

Kansas Certification #: E-10167

Louisiana Certification #: 03086

Louisiana Certification #: LA080009

Maine Certification #: 2007029

Maryland Certification #: 322

Michigan DEQ Certification #: 9909

Minnesota Certification #: 027-053-137

Mississippi Certification #: Pace

Montana Certification #: MT CERT0092

Nevada Certification #: MN_00064

Nebraska Certification #: Pace

New Jersey Certification #: MN-002

New York Certification #: 11647

North Carolina Certification #: 530

North Dakota Certification #: R-036

North Dakota Certification #: R-036A

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Certification #: MN200001

Oregon Certification #: MN300001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification

Tennessee Certification #: 02818

Texas Certification #: T104704192

Utah Certification #: MN00064

Virginia/DCLS Certification #: 002521

Virginia/VELAP Certification #: 460163

Washington Certification #: C754

West Virginia Certification #: 382

Wisconsin Certification #: 999407970

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

SAMPLE SUMMARY

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130556

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60130556003	DR3A1210031800	Water	10/03/12 18:00	10/05/12 10:20
60130556007	DR3A1210040200	Water	10/04/12 02:00	10/05/12 10:20
60130556011	DR3A1210041000	Water	10/04/12 10:00	10/05/12 10:20

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130556

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60130556003	DR3A1210031800	EPA 200.7	JGP	5	PASI-K
		EPA 200.7	JGP	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	AS2	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60130556007	DR3A1210040200	EPA 200.7	JGP	5	PASI-K
		EPA 200.7	JGP	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	AS2	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60130556011	DR3A1210041000	EPA 200.7	JGP	5	PASI-K
		EPA 200.7	JGP	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	AS2	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130556

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: October 15, 2012

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19843

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60130556007

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1074210)
 - Calcium
- MSD (Lab ID: 1074211)
 - Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130556

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: October 15, 2012

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19846

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60130556003

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1074223)
- Calcium, Dissolved

Additional Comments:

Analyte Comments:

QC Batch: MPRP/19846

B: Analyte was detected in the associated method blank.

- DR3A1210040200 (Lab ID: 60130556007)
 - Iron, Dissolved
- DR3A1210041000 (Lab ID: 60130556011)
 - Iron, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130556

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: October 15, 2012

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/19837

B: Analyte was detected in the associated method blank.

- DR3A1210031800 (Lab ID: 60130556003)
 - Cadmium
 - Manganese
 - Lead
 - Zinc
- DR3A1210040200 (Lab ID: 60130556007)
 - Cadmium
 - Lead
 - Zinc
 - Manganese

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130556

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: October 15, 2012

Analyte Comments:

QC Batch: MPRP/19837

B: Analyte was detected in the associated method blank.

- DR3A1210041000 (Lab ID: 60130556011)
 - Cadmium
 - Manganese
 - Lead
 - Zinc

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210041000 (Lab ID: 60130556011)
 - Selenium

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130556

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: October 15, 2012

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19847

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60130556003

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1074237)
 - Manganese, Dissolved
 - Zinc, Dissolved
- MSD (Lab ID: 1074238)
 - Manganese, Dissolved
 - Zinc, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130556

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: October 15, 2012

Analyte Comments:

QC Batch: MPRP/19847

B: Analyte was detected in the associated method blank.

- DR3A1210031800 (Lab ID: 60130556003)
 - Cadmium, Dissolved
 - Copper, Dissolved
 - Manganese, Dissolved
 - Lead, Dissolved
 - Zinc, Dissolved
- DR3A1210040200 (Lab ID: 60130556007)
 - Cadmium, Dissolved
 - Copper, Dissolved
 - Manganese, Dissolved
 - Lead, Dissolved
 - Zinc, Dissolved
- DR3A1210041000 (Lab ID: 60130556011)
 - Cadmium, Dissolved
 - Copper, Dissolved
 - Manganese, Dissolved
 - Lead, Dissolved
 - Zinc, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130556

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: October 15, 2012

General Information:

3 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130556

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: October 15, 2012

General Information:

3 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130556

Sample: DR3A1210031800 Lab ID: 60130556003 Collected: 10/03/12 18:00 Received: 10/05/12 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	216000	ug/L	100	35.8	1	10/05/12 17:00	10/08/12 10:14	7440-70-2	
Iron	3560	ug/L	50.0	17.2	1	10/05/12 17:00	10/08/12 10:14	7439-89-6	
Magnesium	17900	ug/L	50.0	17.2	1	10/05/12 17:00	10/08/12 10:14	7439-95-4	
Potassium	14300	ug/L	500	64.1	1	10/05/12 17:00	10/08/12 10:14	7440-09-7	
Sodium	10600	ug/L	500	40.1	1	10/05/12 17:00	10/08/12 10:14	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	219000	ug/L	100	35.8	1	10/05/12 17:00	10/08/12 10:47	7440-70-2	D9,M1
Iron, Dissolved	ND	ug/L	50.0	17.2	1	10/05/12 17:00	10/08/12 10:47	7439-89-6	
Magnesium, Dissolved	18500	ug/L	50.0	17.2	1	10/05/12 17:00	10/08/12 10:47	7439-95-4	D9
Potassium, Dissolved	14600	ug/L	500	64.1	1	10/05/12 17:00	10/08/12 10:47	7440-09-7	D9
Sodium, Dissolved	10800	ug/L	500	40.1	1	10/05/12 17:00	10/08/12 10:47	7440-23-5	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.9J	ug/L	10.0	1.4	10	10/05/12 17:00	10/11/12 15:28	7440-38-2	
Cadmium	18.4	ug/L	0.50	0.097	1	10/05/12 17:00	10/09/12 17:54	7440-43-9	B
Chromium	0.79J	ug/L	1.0	0.11	1	10/05/12 17:00	10/09/12 17:54	7440-47-3	
Cobalt	3.0	ug/L	1.0	0.048	1	10/05/12 17:00	10/09/12 17:54	7440-48-4	
Copper	40.4	ug/L	1.0	0.45	1	10/05/12 17:00	10/09/12 17:54	7440-50-8	
Lead	1.9	ug/L	1.0	0.051	1	10/05/12 17:00	10/09/12 17:54	7439-92-1	B
Manganese	2010	ug/L	1.0	0.23	1	10/05/12 17:00	10/09/12 17:54	7439-96-5	B,M6
Nickel	4.5	ug/L	1.0	0.35	1	10/05/12 17:00	10/09/12 17:54	7440-02-0	
Selenium	ND	ug/L	1.0	0.35	1	10/05/12 17:00	10/09/12 17:54	7782-49-2	
Zinc	3920	ug/L	10.0	1.6	1	10/05/12 17:00	10/09/12 17:54	7440-66-6	B,M6
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	74.6	ug/L	2.5	0.56	5	10/12/12 18:38	10/14/12 11:15	7439-93-2	
Arsenic, Dissolved	1.4J	ug/L	10.0	1.4	10	10/05/12 17:00	10/11/12 14:26	7440-38-2	
Cadmium, Dissolved	18.4	ug/L	0.50	0.097	1	10/05/12 17:00	10/09/12 17:25	7440-43-9	B
Chromium, Dissolved	0.32J	ug/L	1.0	0.11	1	10/05/12 17:00	10/09/12 17:25	7440-47-3	
Cobalt, Dissolved	2.9	ug/L	1.0	0.048	1	10/05/12 17:00	10/09/12 17:25	7440-48-4	
Copper, Dissolved	4.3	ug/L	1.0	0.45	1	10/05/12 17:00	10/09/12 17:25	7440-50-8	B
Lead, Dissolved	0.14J	ug/L	1.0	0.051	1	10/05/12 17:00	10/09/12 17:25	7439-92-1	B
Manganese, Dissolved	2030	ug/L	1.0	0.23	1	10/05/12 17:00	10/09/12 17:25	7439-96-5	B,D9, M1
Nickel, Dissolved	3.4	ug/L	1.0	0.35	1	10/05/12 17:00	10/09/12 17:25	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.35	1	10/05/12 17:00	10/09/12 17:25	7782-49-2	
Zinc, Dissolved	3620	ug/L	10.0	1.6	1	10/05/12 17:00	10/09/12 17:25	7440-66-6	B,M1
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	98.9	mg/L	20.0	1.2	1		10/08/12 14:43		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/08/12 14:43		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/08/12 14:43		
Alkalinity, Total as CaCO3	98.9	mg/L	20.0	1.2	1		10/08/12 14:43		

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130556

Sample: DR3A1210031800		Lab ID: 60130556003		Collected: 10/03/12 18:00		Received: 10/05/12 10:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.23J	mg/L	1.0	0.078	1		10/05/12 22:01	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		10/05/12 22:01	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/05/12 22:01	16984-48-8	
Sulfate	642	mg/L	100	12.0	100		10/05/12 22:16	14808-79-8	

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130556

Sample: DR3A1210040200 Lab ID: 60130556007 Collected: 10/04/12 02:00 Received: 10/05/12 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	219000	ug/L	100	35.8	1	10/05/12 17:00	10/08/12 10:27	7440-70-2	M1
Iron	3640	ug/L	50.0	17.2	1	10/05/12 17:00	10/08/12 10:27	7439-89-6	
Magnesium	18300	ug/L	50.0	17.2	1	10/05/12 17:00	10/08/12 10:27	7439-95-4	
Potassium	15100	ug/L	500	64.1	1	10/05/12 17:00	10/08/12 10:27	7440-09-7	
Sodium	10700	ug/L	500	40.1	1	10/05/12 17:00	10/08/12 10:27	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	220000	ug/L	100	35.8	1	10/05/12 17:00	10/08/12 11:00	7440-70-2	D9
Iron, Dissolved	29.4J	ug/L	50.0	17.2	1	10/05/12 17:00	10/08/12 11:00	7439-89-6	B
Magnesium, Dissolved	18200	ug/L	50.0	17.2	1	10/05/12 17:00	10/08/12 11:00	7439-95-4	
Potassium, Dissolved	15100	ug/L	500	64.1	1	10/05/12 17:00	10/08/12 11:00	7440-09-7	
Sodium, Dissolved	10800	ug/L	500	40.1	1	10/05/12 17:00	10/08/12 11:00	7440-23-5	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.7J	ug/L	10.0	1.4	10	10/05/12 17:00	10/11/12 15:32	7440-38-2	
Cadmium	17.6	ug/L	0.50	0.097	1	10/05/12 17:00	10/09/12 18:18	7440-43-9	B
Chromium	0.27J	ug/L	1.0	0.11	1	10/05/12 17:00	10/09/12 18:18	7440-47-3	
Cobalt	2.7	ug/L	1.0	0.048	1	10/05/12 17:00	10/09/12 18:18	7440-48-4	
Copper	37.0	ug/L	1.0	0.45	1	10/05/12 17:00	10/09/12 18:18	7440-50-8	
Lead	4.8J	ug/L	10.0	0.51	10	10/05/12 17:00	10/11/12 15:32	7439-92-1	B
Manganese	1840	ug/L	1.0	0.23	1	10/05/12 17:00	10/09/12 18:18	7439-96-5	B
Nickel	3.5	ug/L	1.0	0.35	1	10/05/12 17:00	10/09/12 18:18	7440-02-0	
Selenium	ND	ug/L	1.0	0.35	1	10/05/12 17:00	10/09/12 18:18	7782-49-2	
Zinc	3720	ug/L	10.0	1.6	1	10/05/12 17:00	10/09/12 18:18	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	77.2	ug/L	2.5	0.56	5	10/12/12 18:38	10/14/12 10:36	7439-93-2	
Arsenic, Dissolved	ND	ug/L	10.0	1.4	10	10/05/12 17:00	10/11/12 14:30	7440-38-2	
Cadmium, Dissolved	17.1	ug/L	0.50	0.097	1	10/05/12 17:00	10/09/12 17:38	7440-43-9	B
Chromium, Dissolved	0.41J	ug/L	1.0	0.11	1	10/05/12 17:00	10/09/12 17:38	7440-47-3	
Cobalt, Dissolved	2.8	ug/L	1.0	0.048	1	10/05/12 17:00	10/09/12 17:38	7440-48-4	D9
Copper, Dissolved	3.9	ug/L	1.0	0.45	1	10/05/12 17:00	10/09/12 17:38	7440-50-8	B
Lead, Dissolved	0.15J	ug/L	1.0	0.051	1	10/05/12 17:00	10/09/12 17:38	7439-92-1	B
Manganese, Dissolved	1930	ug/L	1.0	0.23	1	10/05/12 17:00	10/09/12 17:38	7439-96-5	B,D9
Nickel, Dissolved	4.1	ug/L	1.0	0.35	1	10/05/12 17:00	10/09/12 17:38	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.35	1	10/05/12 17:00	10/09/12 17:38	7782-49-2	
Zinc, Dissolved	3660	ug/L	10.0	1.6	1	10/05/12 17:00	10/09/12 17:38	7440-66-6	B
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	98.7	mg/L	20.0	1.2	1		10/08/12 14:47		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/08/12 14:47		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/08/12 14:47		
Alkalinity, Total as CaCO3	98.7	mg/L	20.0	1.2	1		10/08/12 14:47		

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130556

Sample: DR3A1210040200		Lab ID: 60130556007		Collected: 10/04/12 02:00		Received: 10/05/12 10:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.14J	mg/L	1.0	0.078	1		10/06/12 00:06	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		10/06/12 00:06	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/06/12 00:06	16984-48-8	
Sulfate	647	mg/L	100	12.0	100		10/06/12 00:22	14808-79-8	

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130556

Sample: DR3A1210041000 Lab ID: 60130556011 Collected: 10/04/12 10:00 Received: 10/05/12 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	214000	ug/L	100	35.8	1	10/05/12 17:00	10/08/12 10:30	7440-70-2	
Iron	3710	ug/L	50.0	17.2	1	10/05/12 17:00	10/08/12 10:30	7439-89-6	
Magnesium	18000	ug/L	50.0	17.2	1	10/05/12 17:00	10/08/12 10:30	7439-95-4	
Potassium	15200	ug/L	500	64.1	1	10/05/12 17:00	10/08/12 10:30	7440-09-7	
Sodium	10600	ug/L	500	40.1	1	10/05/12 17:00	10/08/12 10:30	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	214000	ug/L	100	35.8	1	10/05/12 17:00	10/08/12 11:04	7440-70-2	D9
Iron, Dissolved	619	ug/L	50.0	17.2	1	10/05/12 17:00	10/08/12 11:04	7439-89-6	B
Magnesium, Dissolved	18200	ug/L	50.0	17.2	1	10/05/12 17:00	10/08/12 11:04	7439-95-4	D9
Potassium, Dissolved	15100	ug/L	500	64.1	1	10/05/12 17:00	10/08/12 11:04	7440-09-7	
Sodium, Dissolved	10600	ug/L	500	40.1	1	10/05/12 17:00	10/08/12 11:04	7440-23-5	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.5J	ug/L	10.0	1.4	10	10/05/12 17:00	10/11/12 15:36	7440-38-2	
Cadmium	18.2	ug/L	0.50	0.097	1	10/05/12 17:00	10/09/12 18:27	7440-43-9	B
Chromium	2.5J	ug/L	10.0	1.1	10	10/05/12 17:00	10/11/12 15:36	7440-47-3	
Cobalt	4.6J	ug/L	10.0	0.48	10	10/05/12 17:00	10/11/12 15:36	7440-48-4	
Copper	42.4	ug/L	10.0	4.5	10	10/05/12 17:00	10/11/12 15:36	7440-50-8	
Lead	4.8J	ug/L	10.0	0.51	10	10/05/12 17:00	10/11/12 15:36	7439-92-1	B
Manganese	2000	ug/L	10.0	2.3	10	10/05/12 17:00	10/11/12 15:36	7439-96-5	B
Nickel	4.4J	ug/L	10.0	3.5	10	10/05/12 17:00	10/11/12 15:36	7440-02-0	
Selenium	ND	ug/L	10.0	3.5	10	10/05/12 17:00	10/11/12 15:36	7782-49-2	D3
Zinc	3930	ug/L	100	16.0	10	10/05/12 17:00	10/11/12 15:36	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	75.8	ug/L	2.5	0.56	5	10/12/12 18:38	10/14/12 11:03	7439-93-2	
Arsenic, Dissolved	ND	ug/L	10.0	1.4	10	10/05/12 17:00	10/11/12 14:34	7440-38-2	
Cadmium, Dissolved	17.5	ug/L	0.50	0.097	1	10/05/12 17:00	10/09/12 17:46	7440-43-9	B
Chromium, Dissolved	0.33J	ug/L	1.0	0.11	1	10/05/12 17:00	10/09/12 17:46	7440-47-3	
Cobalt, Dissolved	2.7	ug/L	1.0	0.048	1	10/05/12 17:00	10/09/12 17:46	7440-48-4	
Copper, Dissolved	7.1	ug/L	1.0	0.45	1	10/05/12 17:00	10/09/12 17:46	7440-50-8	B
Lead, Dissolved	0.16J	ug/L	1.0	0.051	1	10/05/12 17:00	10/09/12 17:46	7439-92-1	B
Manganese, Dissolved	1870	ug/L	1.0	0.23	1	10/05/12 17:00	10/09/12 17:46	7439-96-5	B
Nickel, Dissolved	3.4	ug/L	1.0	0.35	1	10/05/12 17:00	10/09/12 17:46	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.35	1	10/05/12 17:00	10/09/12 17:46	7782-49-2	
Zinc, Dissolved	3550	ug/L	10.0	1.6	1	10/05/12 17:00	10/09/12 17:46	7440-66-6	B
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	96.9	mg/L	20.0	1.2	1		10/08/12 14:51		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/08/12 14:51		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/08/12 14:51		
Alkalinity, Total as CaCO ₃	96.9	mg/L	20.0	1.2	1		10/08/12 14:51		

ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130556

Sample: DR3A1210041000		Lab ID: 60130556011		Collected: 10/04/12 10:00		Received: 10/05/12 10:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.14J	mg/L	1.0	0.078	1		10/06/12 00:38	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		10/06/12 00:38	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/06/12 00:38	16984-48-8	
Sulfate	642	mg/L	100	12.0	100		10/06/12 00:53	14808-79-8	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130556

QC Batch: ICPM/35690 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60130556003, 60130556007, 60130556011

METHOD BLANK: 1308443 Matrix: Water

Associated Lab Samples: 60130556003, 60130556007, 60130556011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lithium, Dissolved	ug/L	ND	0.50	10/13/12 18:21	

LABORATORY CONTROL SAMPLE: 1308444

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lithium, Dissolved	ug/L	80	81.0	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1308445 1308446

Parameter	Units	60130556007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lithium, Dissolved	ug/L	77.2	80	80	161	157	105	99	70-130	3	20	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130556

QC Batch: MPRP/19843 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60130556003, 60130556007, 60130556011

METHOD BLANK: 1074208 Matrix: Water

Associated Lab Samples: 60130556003, 60130556007, 60130556011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	ug/L	ND	100	10/08/12 10:07	
Iron	ug/L	ND	50.0	10/08/12 10:07	
Magnesium	ug/L	ND	50.0	10/08/12 10:07	
Potassium	ug/L	ND	500	10/08/12 10:07	
Sodium	ug/L	ND	500	10/08/12 10:07	

LABORATORY CONTROL SAMPLE: 1074209

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	9590	96	85-115	
Iron	ug/L	10000	9580	96	85-115	
Magnesium	ug/L	10000	9630	96	85-115	
Potassium	ug/L	10000	9520	95	85-115	
Sodium	ug/L	10000	9990	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1074210 1074211

Parameter	Units	60130556007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	219000	10000	10000	224000	223000	49	40	70-130	0	9	M1
Iron	ug/L	3640	10000	10000	12700	12800	91	92	70-130	1	10	
Magnesium	ug/L	18300	10000	10000	26500	26500	82	82	70-130	0	9	
Potassium	ug/L	15100	10000	10000	24600	24600	95	95	70-130	0	7	
Sodium	ug/L	10700	10000	10000	20600	20600	99	99	70-130	0	8	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130556

QC Batch:	MPRP/19846	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Dissolved
Associated Lab Samples:	60130556003, 60130556007, 60130556011		

METHOD BLANK: 1074220 Matrix: Water

Associated Lab Samples: 60130556003, 60130556007, 60130556011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	10/08/12 10:37	
Iron, Dissolved	ug/L	19.9J	50.0	10/08/12 10:37	
Magnesium, Dissolved	ug/L	ND	50.0	10/08/12 10:37	
Potassium, Dissolved	ug/L	ND	500	10/08/12 10:37	
Sodium, Dissolved	ug/L	ND	500	10/08/12 10:37	

LABORATORY CONTROL SAMPLE: 1074221

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9480	95	85-115	
Iron, Dissolved	ug/L	10000	9480	95	85-115	
Magnesium, Dissolved	ug/L	10000	9580	96	85-115	
Potassium, Dissolved	ug/L	10000	9440	94	85-115	
Sodium, Dissolved	ug/L	10000	9900	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1074222 1074223

Parameter	60130556003		MS	MSD	MS	MSD	MS	MSD	% Rec	Max		
	Units	Result	Spike Conc.	Spike Conc.						Result	Result	% Rec
Calcium, Dissolved	ug/L	219000	10000	10000	227000	234000	86	153	70-130	3	9	M1
Iron, Dissolved	ug/L	ND	10000	10000	9350	9680	93	97	70-130	3	10	
Magnesium, Dissolved	ug/L	18500	10000	10000	27600	28600	91	101	70-130	3	9	
Potassium, Dissolved	ug/L	14600	10000	10000	24300	24900	97	103	70-130	2	7	
Sodium, Dissolved	ug/L	10800	10000	10000	21000	21600	102	107	70-130	3	8	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130556

QC Batch: MPRP/19837 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60130556003, 60130556007, 60130556011

METHOD BLANK: 1074163 Matrix: Water

Associated Lab Samples: 60130556003, 60130556007, 60130556011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	10/11/12 15:12	
Cadmium	ug/L	0.13J	0.50	10/09/12 18:06	
Chromium	ug/L	ND	1.0	10/09/12 18:06	
Cobalt	ug/L	ND	1.0	10/09/12 18:06	
Copper	ug/L	ND	1.0	10/09/12 18:06	
Lead	ug/L	0.070J	1.0	10/09/12 18:06	
Manganese	ug/L	0.40J	1.0	10/09/12 18:06	
Nickel	ug/L	ND	1.0	10/09/12 18:06	
Selenium	ug/L	ND	1.0	10/09/12 18:06	
Zinc	ug/L	6.9J	10.0	10/09/12 18:06	

LABORATORY CONTROL SAMPLE: 1074164

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	41.1	103	85-115	
Cadmium	ug/L	40	39.9	100	85-115	
Chromium	ug/L	40	40.3	101	85-115	
Cobalt	ug/L	40	39.7	99	85-115	
Copper	ug/L	40	40.0	100	85-115	
Lead	ug/L	40	40.2	101	85-115	
Manganese	ug/L	40	39.7	99	85-115	
Nickel	ug/L	40	39.8	99	85-115	
Selenium	ug/L	40	38.6	97	85-115	
Zinc	ug/L	100	110	110	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1074165 1074166

Parameter	Units	60130556003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	1.9J	40	40	43.3	40.8	104	97	70-130	6	20	
Cadmium	ug/L	18.4	40	40	52.9	58.6	86	100	70-130	10	20	
Chromium	ug/L	0.79J	40	40	43.5	43.6	107	107	70-130	0	20	
Cobalt	ug/L	3.0	40	40	44.1	43.5	103	101	70-130	1	20	
Copper	ug/L	40.4	40	40	79.6	80.4	98	100	70-130	1	20	
Lead	ug/L	1.9	40	40	44.5	42.8	106	102	70-130	4	20	
Manganese	ug/L	2010	40	40	2010	1980	-10	-80	70-130	1	20 M6	
Nickel	ug/L	4.5	40	40	47.2	44.1	107	99	70-130	7	20	
Selenium	ug/L	ND	40	40	41.4	38.4	103	96	70-130	8	20	
Zinc	ug/L	3920	100	100	3950	3900	25	-19	70-130	1	20 M6	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130556

QC Batch: MPRP/19847 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60130556003, 60130556007, 60130556011

METHOD BLANK: 1074235 Matrix: Water

Associated Lab Samples: 60130556003, 60130556007, 60130556011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	10/11/12 14:10	
Cadmium, Dissolved	ug/L	0.12J	0.50	10/09/12 17:17	
Chromium, Dissolved	ug/L	ND	1.0	10/09/12 17:17	
Cobalt, Dissolved	ug/L	ND	1.0	10/09/12 17:17	
Copper, Dissolved	ug/L	1.5	1.0	10/11/12 14:10	
Lead, Dissolved	ug/L	0.14J	1.0	10/09/12 17:17	
Manganese, Dissolved	ug/L	0.39J	1.0	10/09/12 17:17	
Nickel, Dissolved	ug/L	ND	1.0	10/09/12 17:17	
Selenium, Dissolved	ug/L	ND	1.0	10/09/12 17:17	
Zinc, Dissolved	ug/L	4.1J	10.0	10/09/12 17:17	

LABORATORY CONTROL SAMPLE: 1074236

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	40.6	101	85-115	
Cadmium, Dissolved	ug/L	40	41.0	103	85-115	
Chromium, Dissolved	ug/L	40	41.5	104	85-115	
Cobalt, Dissolved	ug/L	40	40.7	102	85-115	
Copper, Dissolved	ug/L	40	41.9	105	85-115	
Lead, Dissolved	ug/L	40	41.0	103	85-115	
Manganese, Dissolved	ug/L	40	42.1	105	85-115	
Nickel, Dissolved	ug/L	40	41.1	103	85-115	
Selenium, Dissolved	ug/L	40	43.2	108	85-115	
Zinc, Dissolved	ug/L	100	111	111	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1074237 1074238

Parameter	Units	60130556003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	1.4J	40	40	42.7	41.8	103	101	70-130	2	20	
Cadmium, Dissolved	ug/L	18.4	40	40	55.2	53.9	92	89	70-130	2	20	
Chromium, Dissolved	ug/L	0.32J	40	40	40.2	39.2	100	97	70-130	3	20	
Cobalt, Dissolved	ug/L	2.9	40	40	41.1	40.5	96	94	70-130	2	20	
Copper, Dissolved	ug/L	4.3	40	40	41.3	41.3	92	92	70-130	0	20	
Lead, Dissolved	ug/L	0.14J	40	40	38.4	37.6	96	94	70-130	2	20	
Manganese, Dissolved	ug/L	2030	40	40	2030	1930	-18	-268	70-130	5	20 M1	
Nickel, Dissolved	ug/L	3.4	40	40	42.8	40.7	98	93	70-130	5	20	
Selenium, Dissolved	ug/L	ND	40	40	38.6	38.4	96	96	70-130	1	20	
Zinc, Dissolved	ug/L	3620	100	100	3760	3650	148	37	70-130	3	20 M1	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130556

QC Batch: WET/37538

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60130556003, 60130556007, 60130556011

METHOD BLANK: 1075380

Matrix: Water

Associated Lab Samples: 60130556003, 60130556007, 60130556011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	10/08/12 13:34	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	10/08/12 13:34	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	10/08/12 13:34	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	10/08/12 13:34	

LABORATORY CONTROL SAMPLE: 1075381

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	492	98	90-110	

SAMPLE DUPLICATE: 1075382

Parameter	Units	60130421003 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	98.1	97.0	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	98.1	97.0	1	9	

SAMPLE DUPLICATE: 1075383

Parameter	Units	60130571006 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	4.8J		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	59.1	61.0	3	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	53.2	56.3	6	9	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130556

QC Batch: WETA/21923 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60130556003, 60130556007, 60130556011

METHOD BLANK: 1074491 Matrix: Water

Associated Lab Samples: 60130556003, 60130556007, 60130556011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	10/05/12 21:29	
Chloride	mg/L	ND	1.0	10/05/12 21:29	
Fluoride	mg/L	ND	0.20	10/05/12 21:29	
Sulfate	mg/L	ND	1.0	10/05/12 21:29	

METHOD BLANK: 1074804 Matrix: Water

Associated Lab Samples: 60130556003, 60130556007, 60130556011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	10/06/12 09:41	
Chloride	mg/L	ND	1.0	10/06/12 09:41	
Fluoride	mg/L	ND	0.20	10/06/12 09:41	
Sulfate	mg/L	ND	1.0	10/06/12 09:41	

LABORATORY CONTROL SAMPLE: 1074492

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.9	97	90-110	
Chloride	mg/L	5	4.6	91	90-110	
Fluoride	mg/L	2.5	2.4	97	90-110	
Sulfate	mg/L	5	5.0	101	90-110	

LABORATORY CONTROL SAMPLE: 1074805

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.8	97	90-110	
Chloride	mg/L	5	4.5	91	90-110	
Fluoride	mg/L	2.5	2.4	96	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1074493 1074494

Parameter	Units	60130556003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	0.23J	5	5	5.4	5.2	102	100	75-119	2	10	
Chloride	mg/L	ND	5	5	5.6	5.4	104	102	64-118	2	12	

Date: 10/15/2012 06:01 PM

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130556

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 10744931074494												
Parameter	Units	60130556003	MS	MSD	MS	MSD	MS	MSD	% Rec	Max	Qual	
		Result	Spike	Spike								Result
Fluoride	mg/L	2.2	2.5	2.5	4.8	4.8	105	103	75-110	1	10	
Sulfate	mg/L	642	500	500	1140	1150	100	101	61-119	0	10	

QUALIFIERS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130556

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

PASI-M Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60130556

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60130556003	DR3A1210031800	EPA 200.7	MPRP/19843	EPA 200.7	ICP/16319
60130556007	DR3A1210040200	EPA 200.7	MPRP/19843	EPA 200.7	ICP/16319
60130556011	DR3A1210041000	EPA 200.7	MPRP/19843	EPA 200.7	ICP/16319
60130556003	DR3A1210031800	EPA 200.7	MPRP/19846	EPA 200.7	ICP/16322
60130556007	DR3A1210040200	EPA 200.7	MPRP/19846	EPA 200.7	ICP/16322
60130556011	DR3A1210041000	EPA 200.7	MPRP/19846	EPA 200.7	ICP/16322
60130556003	DR3A1210031800	EPA 200.8	MPRP/19837	EPA 200.8	ICPM/1694
60130556007	DR3A1210040200	EPA 200.8	MPRP/19837	EPA 200.8	ICPM/1694
60130556011	DR3A1210041000	EPA 200.8	MPRP/19837	EPA 200.8	ICPM/1694
60130556003	DR3A1210031800	EPA 200.8	ICPM/35690	EPA 200.8	ICPM/14086
60130556003	DR3A1210031800	EPA 200.8	MPRP/19847	EPA 200.8	ICPM/1689
60130556007	DR3A1210040200	EPA 200.8	ICPM/35690	EPA 200.8	ICPM/14086
60130556007	DR3A1210040200	EPA 200.8	MPRP/19847	EPA 200.8	ICPM/1689
60130556011	DR3A1210041000	EPA 200.8	ICPM/35690	EPA 200.8	ICPM/14086
60130556011	DR3A1210041000	EPA 200.8	MPRP/19847	EPA 200.8	ICPM/1689
60130556003	DR3A1210031800	SM 2320B	WET/37538		
60130556007	DR3A1210040200	SM 2320B	WET/37538		
60130556011	DR3A1210041000	SM 2320B	WET/37538		
60130556003	DR3A1210031800	EPA 300.0	WETA/21923		
60130556007	DR3A1210040200	EPA 300.0	WETA/21923		
60130556011	DR3A1210041000	EPA 300.0	WETA/21923		

October 19, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60130678

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on October 06, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Alice Flanagan for
Heather Wilson
heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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Pace Package 1 of 32

CERTIFICATIONS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130678

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: Pace
Florida/NELAP Certification #: E87605
Georgia Certification #: 959
Hawaii Certification #Pace
Idaho Certification #: MN00064
Illinois Certification #: 200011
Kansas Certification #: E-10167
Louisiana Certification #: 03086
Louisiana Certification #: LA080009
Maine Certification #: 2007029
Maryland Certification #: 322
Michigan DEQ Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace

Montana Certification #: MT CERT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Dakota Certification #: R-036
North Dakota Certification #: R-036A
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Tennessee Certification #: 02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia/DCLS Certification #: 002521
Virginia/VELAP Certification #: 460163
Washington Certification #: C754
West Virginia Certification #: 382
Wisconsin Certification #: 999407970

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
A2LA Certification #: 2456.01
Arkansas Certification #: 12-019-0
Illinois Certification #: 002885
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-12-3
Utah Certification #: KS000212012-2

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SAMPLE SUMMARY

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130678

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60130678001	BLAINEOBF121004	Water	10/04/12 09:39	10/06/12 09:10
60130678002	BLAINEIBF121004	Water	10/04/12 09:49	10/06/12 09:10
60130678003	517SHAFT452121004	Water	10/04/12 12:00	10/06/12 09:10
60130678004	517SHAFT529121004	Water	10/04/12 17:30	10/06/12 09:10

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SAMPLE ANALYTE COUNT

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130678

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60130678001	BLAINEOBF121004	EPA 200.7	JGP	5	PASI-K
		EPA 200.7	JGP	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	AS2	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60130678002	BLAINEIBF121004	EPA 200.7	JGP	5	PASI-K
		EPA 200.7	JGP	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	AS2	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60130678003	517SHAFT452121004	EPA 200.7	JGP	5	PASI-K
		EPA 200.7	JGP	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	AS2	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60130678004	517SHAFT529121004	EPA 200.7	JGP	5	PASI-K
		EPA 200.7	JGP	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	AS2	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130678

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: October 19, 2012

General Information:

4 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/19854

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- BLAINEOBF121004 (Lab ID: 60130678001)
 - Potassium

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130678

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: October 19, 2012

General Information:

4 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/19859

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- BLAINEOBF121004 (Lab ID: 60130678001)
- Potassium, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130678

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: October 19, 2012

General Information:

4 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19855

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60130678001

D6: The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.

- MSD (Lab ID: 1075503)
- Cobalt

Additional Comments:

Analyte Comments:

QC Batch: MPRP/19855

B: Analyte was detected in the associated method blank.

- 517SHAFT452121004 (Lab ID: 60130678003)
 - Cadmium
 - Cobalt
 - Chromium
 - Lead

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130678

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: October 19, 2012

Analyte Comments:

QC Batch: MPRP/19855

B: Analyte was detected in the associated method blank.

- 517SHAFT529121004 (Lab ID: 60130678004)
 - Cadmium
 - Cobalt
 - Chromium
 - Lead
- BLAINEIBF121004 (Lab ID: 60130678002)
 - Cadmium
 - Cobalt
 - Chromium
 - Lead
- BLAINEOBF121004 (Lab ID: 60130678001)
 - Cadmium
 - Cobalt
 - Chromium
 - Lead

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- 517SHAFT452121004 (Lab ID: 60130678003)
 - Selenium
- 517SHAFT529121004 (Lab ID: 60130678004)
 - Selenium
- BLAINEIBF121004 (Lab ID: 60130678002)
 - Arsenic
 - Selenium
- BLAINEOBF121004 (Lab ID: 60130678001)
 - Selenium

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130678

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: October 19, 2012

General Information:

4 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/19858

B: Analyte was detected in the associated method blank.

- 517SHAFT452121004 (Lab ID: 60130678003)
 - Arsenic, Dissolved
 - Cadmium, Dissolved
 - Cobalt, Dissolved
 - Chromium, Dissolved
 - Nickel, Dissolved
 - Lead, Dissolved
- 517SHAFT529121004 (Lab ID: 60130678004)
 - Arsenic, Dissolved
 - Cadmium, Dissolved
 - Cobalt, Dissolved

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130678

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: October 19, 2012

Analyte Comments:

QC Batch: MPRP/19858

B: Analyte was detected in the associated method blank.

- 517SHAFT529121004 (Lab ID: 60130678004)
 - Chromium, Dissolved
 - Nickel, Dissolved
 - Lead, Dissolved
- BLAINEIBF121004 (Lab ID: 60130678002)
 - Arsenic, Dissolved
 - Cadmium, Dissolved
 - Cobalt, Dissolved
 - Chromium, Dissolved
 - Nickel, Dissolved
 - Lead, Dissolved
- BLAINEOBF121004 (Lab ID: 60130678001)
 - Cadmium, Dissolved
 - Cobalt, Dissolved
 - Chromium, Dissolved
 - Nickel, Dissolved
 - Lead, Dissolved

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- 517SHAFT452121004 (Lab ID: 60130678003)
 - Arsenic, Dissolved
 - Selenium, Dissolved
- 517SHAFT529121004 (Lab ID: 60130678004)
 - Selenium, Dissolved
- BLAINEIBF121004 (Lab ID: 60130678002)
 - Selenium, Dissolved
- BLAINEOBF121004 (Lab ID: 60130678001)
 - Selenium, Dissolved

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130678

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: October 19, 2012

General Information:

4 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130678

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: October 19, 2012

General Information:

4 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130678

Sample: BLAINEOBF121004 Lab ID: 60130678001 Collected: 10/04/12 09:39 Received: 10/06/12 09:10 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	431000	ug/L	2000	716	20	10/08/12 11:50	10/11/12 13:12	7440-70-2	
Iron	2910000	ug/L	1000	344	20	10/08/12 11:50	10/11/12 13:12	7439-89-6	
Magnesium	249000	ug/L	1000	344	20	10/08/12 11:50	10/11/12 13:12	7439-95-4	
Potassium	ND	ug/L	10000	1280	20	10/08/12 11:50	10/11/12 13:12	7440-09-7	D3
Sodium	20400	ug/L	10000	802	20	10/08/12 11:50	10/11/12 13:12	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	432000	ug/L	2000	716	20	10/08/12 11:50	10/11/12 11:22	7440-70-2	D9
Iron, Dissolved	2900000	ug/L	1000	344	20	10/08/12 11:50	10/11/12 11:22	7439-89-6	
Magnesium, Dissolved	243000	ug/L	1000	344	20	10/08/12 11:50	10/11/12 11:22	7439-95-4	
Potassium, Dissolved	ND	ug/L	10000	1280	20	10/08/12 11:50	10/11/12 11:22	7440-09-7	D3
Sodium, Dissolved	19700	ug/L	10000	802	20	10/08/12 11:50	10/11/12 11:22	7440-23-5	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	3060	ug/L	200	28.0	200	10/08/12 11:50	10/11/12 18:01	7440-38-2	M6
Cadmium	3170	ug/L	100	19.4	200	10/08/12 11:50	10/11/12 18:01	7440-43-9	B,M6
Chromium	294	ug/L	200	22.0	200	10/08/12 11:50	10/11/12 18:01	7440-47-3	B,M6
Cobalt	495	ug/L	200	9.6	200	10/08/12 11:50	10/11/12 18:01	7440-48-4	B,M6
Copper	36000	ug/L	200	90.0	200	10/08/12 11:50	10/11/12 18:01	7440-50-8	M6
Lead	869	ug/L	200	10.2	200	10/08/12 11:50	10/12/12 13:31	7439-92-1	B,M6
Manganese	172000	ug/L	200	46.0	200	10/08/12 11:50	10/11/12 18:01	7439-96-5	M6
Nickel	574	ug/L	200	70.0	200	10/08/12 11:50	10/11/12 18:01	7440-02-0	M6
Selenium	ND	ug/L	200	70.0	200	10/08/12 11:50	10/11/12 18:01	7782-49-2	D3
Zinc	479000	ug/L	2000	320	200	10/08/12 11:50	10/11/12 18:01	7440-66-6	M6
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	369	ug/L	2.5	0.56	5	10/11/12 12:40	10/12/12 19:12	7439-93-2	
Arsenic, Dissolved	2920	ug/L	200	28.0	200	10/08/12 11:50	10/11/12 17:20	7440-38-2	M6
Cadmium, Dissolved	2950	ug/L	100	19.4	200	10/08/12 11:50	10/11/12 17:20	7440-43-9	B,M6
Chromium, Dissolved	295	ug/L	200	22.0	200	10/08/12 11:50	10/11/12 17:20	7440-47-3	B,D9
Cobalt, Dissolved	466	ug/L	200	9.6	200	10/08/12 11:50	10/11/12 17:20	7440-48-4	B
Copper, Dissolved	33700	ug/L	200	90.0	200	10/08/12 11:50	10/11/12 17:20	7440-50-8	M6
Lead, Dissolved	916	ug/L	200	10.2	200	10/08/12 11:50	10/11/12 17:20	7439-92-1	B,D9, M6
Manganese, Dissolved	162000	ug/L	200	46.0	200	10/08/12 11:50	10/11/12 17:20	7439-96-5	M6
Nickel, Dissolved	551	ug/L	200	70.0	200	10/08/12 11:50	10/11/12 17:20	7440-02-0	B,M6
Selenium, Dissolved	ND	ug/L	200	70.0	200	10/08/12 11:50	10/11/12 17:20	7782-49-2	D3
Zinc, Dissolved	451000	ug/L	2000	320	200	10/08/12 11:50	10/11/12 17:20	7440-66-6	M6
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/09/12 08:47		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/09/12 08:47		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/09/12 08:47		
Alkalinity, Total as CaCO3	ND	mg/L	20.0	1.2	1		10/09/12 08:47		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130678

Sample: BLAINEOBF121004		Lab ID: 60130678001	Collected: 10/04/12 09:39	Received: 10/06/12 09:10	Matrix: Water				
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.078	1		10/07/12 14:18	24959-67-9	
Chloride	2.0	mg/L	1.0	0.50	1		10/07/12 14:18	16887-00-6	
Fluoride	47.5	mg/L	2.0	0.11	10		10/08/12 01:16	16984-48-8	
Sulfate	23400	mg/L	2000	240	2000		10/08/12 18:35	14808-79-8	

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130678

Sample: BLAINEIBF121004 Lab ID: 60130678002 Collected: 10/04/12 09:49 Received: 10/06/12 09:10 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	369000	ug/L	2000	716	20	10/08/12 11:50	10/11/12 11:20	7440-70-2	M6
Iron	1600000	ug/L	1000	344	20	10/08/12 11:50	10/11/12 11:20	7439-89-6	M6
Magnesium	215000	ug/L	1000	344	20	10/08/12 11:50	10/11/12 11:20	7439-95-4	
Potassium	6760J	ug/L	10000	1280	20	10/08/12 11:50	10/11/12 11:20	7440-09-7	
Sodium	5420J	ug/L	10000	802	20	10/08/12 11:50	10/11/12 11:20	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	365000	ug/L	2000	716	20	10/08/12 11:50	10/11/12 11:24	7440-70-2	M6
Iron, Dissolved	1580000	ug/L	1000	344	20	10/08/12 11:50	10/11/12 11:24	7439-89-6	M6
Magnesium, Dissolved	213000	ug/L	1000	344	20	10/08/12 11:50	10/11/12 11:24	7439-95-4	M6
Potassium, Dissolved	5980J	ug/L	10000	1280	20	10/08/12 11:50	10/11/12 11:24	7440-09-7	
Sodium, Dissolved	5520J	ug/L	10000	802	20	10/08/12 11:50	10/11/12 11:24	7440-23-5	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	ND	ug/L	200	28.0	200	10/08/12 11:50	10/12/12 13:35	7440-38-2	D3
Cadmium	1320	ug/L	100	19.4	200	10/08/12 11:50	10/12/12 13:35	7440-43-9	B
Chromium	221	ug/L	200	22.0	200	10/08/12 11:50	10/12/12 13:35	7440-47-3	B
Cobalt	235	ug/L	200	9.6	200	10/08/12 11:50	10/12/12 13:35	7440-48-4	B
Copper	26800	ug/L	200	90.0	200	10/08/12 11:50	10/12/12 13:35	7440-50-8	
Lead	235	ug/L	200	10.2	200	10/08/12 11:50	10/12/12 13:35	7439-92-1	B
Manganese	112000	ug/L	200	46.0	200	10/08/12 11:50	10/12/12 13:35	7439-96-5	
Nickel	430	ug/L	200	70.0	200	10/08/12 11:50	10/12/12 13:35	7440-02-0	
Selenium	ND	ug/L	200	70.0	200	10/08/12 11:50	10/12/12 13:35	7782-49-2	D3
Zinc	202000	ug/L	2000	320	200	10/08/12 11:50	10/12/12 13:35	7440-66-6	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	284	ug/L	2.5	0.56	5	10/11/12 12:40	10/12/12 19:43	7439-93-2	
Arsenic, Dissolved	62.8J	ug/L	200	28.0	200	10/08/12 11:50	10/11/12 17:16	7440-38-2	B
Cadmium, Dissolved	1320	ug/L	100	19.4	200	10/08/12 11:50	10/11/12 17:16	7440-43-9	B
Chromium, Dissolved	267	ug/L	200	22.0	200	10/08/12 11:50	10/11/12 17:16	7440-47-3	B,D9
Cobalt, Dissolved	283	ug/L	200	9.6	200	10/08/12 11:50	10/11/12 17:16	7440-48-4	B,D9
Copper, Dissolved	26700	ug/L	200	90.0	200	10/08/12 11:50	10/11/12 17:16	7440-50-8	
Lead, Dissolved	270	ug/L	200	10.2	200	10/08/12 11:50	10/11/12 17:16	7439-92-1	B,D9
Manganese, Dissolved	108000	ug/L	200	46.0	200	10/08/12 11:50	10/11/12 17:16	7439-96-5	
Nickel, Dissolved	449	ug/L	200	70.0	200	10/08/12 11:50	10/11/12 17:16	7440-02-0	B,D9
Selenium, Dissolved	ND	ug/L	200	70.0	200	10/08/12 11:50	10/11/12 17:16	7782-49-2	D3
Zinc, Dissolved	199000	ug/L	2000	320	200	10/08/12 11:50	10/11/12 17:16	7440-66-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/09/12 08:50		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/09/12 08:50		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/09/12 08:50		
Alkalinity, Total as CaCO3	ND	mg/L	20.0	1.2	1		10/09/12 08:50		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130678

Sample: BLAINEIBF121004		Lab ID: 60130678002	Collected: 10/04/12 09:49	Received: 10/06/12 09:10	Matrix: Water				
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.078	1		10/07/12 14:50	24959-67-9	
Chloride	1.3	mg/L	1.0	0.50	1		10/07/12 14:50	16887-00-6	
Fluoride	63.6	mg/L	2.0	0.11	10		10/08/12 01:48	16984-48-8	
Sulfate	13500	mg/L	2000	240	2000		10/08/12 10:52	14808-79-8	

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130678

Sample: 517SHAFT452121004 Lab ID: 60130678003 Collected: 10/04/12 12:00 Received: 10/06/12 09:10 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	287000	ug/L	100	35.8	1	10/08/12 11:50	10/10/12 14:18	7440-70-2	
Iron	3830	ug/L	50.0	17.2	1	10/08/12 11:50	10/10/12 14:18	7439-89-6	
Magnesium	23600	ug/L	50.0	17.2	1	10/08/12 11:50	10/10/12 14:18	7439-95-4	
Potassium	61100	ug/L	500	64.1	1	10/08/12 11:50	10/10/12 14:18	7440-09-7	
Sodium	9990	ug/L	500	40.1	1	10/08/12 11:50	10/10/12 14:18	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	284000	ug/L	100	35.8	1	10/08/12 11:50	10/10/12 14:45	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	17.2	1	10/08/12 11:50	10/10/12 14:45	7439-89-6	
Magnesium, Dissolved	23500	ug/L	50.0	17.2	1	10/08/12 11:50	10/10/12 14:45	7439-95-4	
Potassium, Dissolved	60500	ug/L	500	64.1	1	10/08/12 11:50	10/10/12 14:45	7440-09-7	
Sodium, Dissolved	9890	ug/L	500	40.1	1	10/08/12 11:50	10/10/12 14:45	7440-23-5	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	2.6J	ug/L	10.0	1.4	10	10/08/12 11:50	10/11/12 18:17	7440-38-2	
Cadmium	36.6	ug/L	5.0	0.97	10	10/08/12 11:50	10/11/12 18:17	7440-43-9	B
Chromium	3.7J	ug/L	10.0	1.1	10	10/08/12 11:50	10/11/12 18:17	7440-47-3	B
Cobalt	4.6J	ug/L	10.0	0.48	10	10/08/12 11:50	10/11/12 18:17	7440-48-4	B
Copper	181	ug/L	10.0	4.5	10	10/08/12 11:50	10/11/12 18:17	7440-50-8	
Lead	24.2	ug/L	10.0	0.51	10	10/08/12 11:50	10/12/12 13:39	7439-92-1	B
Manganese	2510	ug/L	10.0	2.3	10	10/08/12 11:50	10/11/12 18:17	7439-96-5	
Nickel	5.6J	ug/L	10.0	3.5	10	10/08/12 11:50	10/11/12 18:17	7440-02-0	
Selenium	ND	ug/L	10.0	3.5	10	10/08/12 11:50	10/11/12 18:17	7782-49-2	D3
Zinc	6480	ug/L	100	16.0	10	10/08/12 11:50	10/11/12 18:17	7440-66-6	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	251	ug/L	2.5	0.56	5	10/11/12 12:40	10/12/12 19:55	7439-93-2	
Arsenic, Dissolved	ND	ug/L	10.0	1.4	10	10/08/12 11:50	10/11/12 16:25	7440-38-2	B,D3
Cadmium, Dissolved	35.8	ug/L	5.0	0.97	10	10/08/12 11:50	10/11/12 16:25	7440-43-9	B
Chromium, Dissolved	2.8J	ug/L	10.0	1.1	10	10/08/12 11:50	10/11/12 16:25	7440-47-3	B
Cobalt, Dissolved	4.8J	ug/L	10.0	0.48	10	10/08/12 11:50	10/11/12 16:25	7440-48-4	B
Copper, Dissolved	19.2	ug/L	10.0	4.5	10	10/08/12 11:50	10/11/12 16:25	7440-50-8	
Lead, Dissolved	3.3J	ug/L	10.0	0.51	10	10/08/12 11:50	10/11/12 16:25	7439-92-1	B
Manganese, Dissolved	2580	ug/L	10.0	2.3	10	10/08/12 11:50	10/11/12 16:25	7439-96-5	D9
Nickel, Dissolved	5.4J	ug/L	10.0	3.5	10	10/08/12 11:50	10/11/12 16:25	7440-02-0	B
Selenium, Dissolved	ND	ug/L	10.0	3.5	10	10/08/12 11:50	10/11/12 16:25	7782-49-2	D3
Zinc, Dissolved	5860	ug/L	100	16.0	10	10/08/12 11:50	10/11/12 16:25	7440-66-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	128	mg/L	20.0	1.2	1		10/09/12 08:54		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/09/12 08:54		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/09/12 08:54		
Alkalinity, Total as CaCO3	128	mg/L	20.0	1.2	1		10/09/12 08:54		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130678

Sample: 517SHAFT452121004		Lab ID: 60130678003		Collected: 10/04/12 12:00		Received: 10/06/12 09:10		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.078	1		10/07/12 15:21	24959-67-9	
Chloride	1.2	mg/L	1.0	0.50	1		10/07/12 15:21	16887-00-6	
Fluoride	2.6	mg/L	0.20	0.011	1		10/07/12 15:21	16984-48-8	
Sulfate	936	mg/L	100	12.0	100		10/08/12 02:19	14808-79-8	

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130678

Sample: 517SHAFT529121004 Lab ID: 60130678004 Collected: 10/04/12 17:30 Received: 10/06/12 09:10 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	281000	ug/L	100	35.8	1	10/08/12 11:50	10/10/12 14:20	7440-70-2	
Iron	8690	ug/L	50.0	17.2	1	10/08/12 11:50	10/10/12 14:20	7439-89-6	
Magnesium	23300	ug/L	50.0	17.2	1	10/08/12 11:50	10/10/12 14:20	7439-95-4	
Potassium	58700	ug/L	500	64.1	1	10/08/12 11:50	10/10/12 14:20	7440-09-7	
Sodium	9860	ug/L	500	40.1	1	10/08/12 11:50	10/10/12 14:20	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	278000	ug/L	100	35.8	1	10/08/12 11:50	10/10/12 14:47	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	17.2	1	10/08/12 11:50	10/10/12 14:47	7439-89-6	
Magnesium, Dissolved	23100	ug/L	50.0	17.2	1	10/08/12 11:50	10/10/12 14:47	7439-95-4	
Potassium, Dissolved	58200	ug/L	500	64.1	1	10/08/12 11:50	10/10/12 14:47	7440-09-7	
Sodium, Dissolved	9750	ug/L	500	40.1	1	10/08/12 11:50	10/10/12 14:47	7440-23-5	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	4.2J	ug/L	10.0	1.4	10	10/08/12 11:50	10/11/12 18:21	7440-38-2	
Cadmium	39.3	ug/L	5.0	0.97	10	10/08/12 11:50	10/11/12 18:21	7440-43-9	B
Chromium	4.6J	ug/L	10.0	1.1	10	10/08/12 11:50	10/11/12 18:21	7440-47-3	B
Cobalt	5.2J	ug/L	10.0	0.48	10	10/08/12 11:50	10/11/12 18:21	7440-48-4	B
Copper	317	ug/L	10.0	4.5	10	10/08/12 11:50	10/11/12 18:21	7440-50-8	
Lead	55.0	ug/L	10.0	0.51	10	10/08/12 11:50	10/12/12 13:44	7439-92-1	B
Manganese	2640	ug/L	10.0	2.3	10	10/08/12 11:50	10/11/12 18:21	7439-96-5	
Nickel	5.3J	ug/L	10.0	3.5	10	10/08/12 11:50	10/11/12 18:21	7440-02-0	
Selenium	ND	ug/L	10.0	3.5	10	10/08/12 11:50	10/11/12 18:21	7782-49-2	D3
Zinc	6960	ug/L	100	16.0	10	10/08/12 11:50	10/11/12 18:21	7440-66-6	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	238	ug/L	2.5	0.56	5	10/11/12 12:40	10/12/12 20:01	7439-93-2	
Arsenic, Dissolved	1.4J	ug/L	10.0	1.4	10	10/08/12 11:50	10/11/12 16:29	7440-38-2	B
Cadmium, Dissolved	34.7	ug/L	5.0	0.97	10	10/08/12 11:50	10/11/12 16:29	7440-43-9	B
Chromium, Dissolved	2.8J	ug/L	10.0	1.1	10	10/08/12 11:50	10/11/12 16:29	7440-47-3	B
Cobalt, Dissolved	4.6J	ug/L	10.0	0.48	10	10/08/12 11:50	10/11/12 16:29	7440-48-4	B
Copper, Dissolved	18.6	ug/L	10.0	4.5	10	10/08/12 11:50	10/11/12 16:29	7440-50-8	
Lead, Dissolved	3.3J	ug/L	10.0	0.51	10	10/08/12 11:50	10/11/12 16:29	7439-92-1	B
Manganese, Dissolved	2560	ug/L	10.0	2.3	10	10/08/12 11:50	10/11/12 16:29	7439-96-5	
Nickel, Dissolved	5.8J	ug/L	10.0	3.5	10	10/08/12 11:50	10/11/12 16:29	7440-02-0	B
Selenium, Dissolved	ND	ug/L	10.0	3.5	10	10/08/12 11:50	10/11/12 16:29	7782-49-2	D3
Zinc, Dissolved	5900	ug/L	100	16.0	10	10/08/12 11:50	10/11/12 16:29	7440-66-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	127	mg/L	20.0	1.2	1		10/09/12 08:58		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/09/12 08:58		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/09/12 08:58		
Alkalinity, Total as CaCO3	127	mg/L	20.0	1.2	1		10/09/12 08:58		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130678

Sample: 517SHAFT529121004		Lab ID: 60130678004		Collected: 10/04/12 17:30		Received: 10/06/12 09:10		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.078	1		10/07/12 15:37	24959-67-9	
Chloride	1.1	mg/L	1.0	0.50	1		10/07/12 15:37	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/07/12 15:37	16984-48-8	
Sulfate	846	mg/L	100	12.0	100		10/08/12 02:35	14808-79-8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130678

QC Batch:	ICPM/35658	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET Dissolved
Associated Lab Samples:	60130678001, 60130678002, 60130678003, 60130678004		

METHOD BLANK:	1307209	Matrix:	Water
Associated Lab Samples:	60130678001, 60130678002, 60130678003, 60130678004		

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lithium, Dissolved	ug/L	ND	0.50	10/12/12 18:23	

LABORATORY CONTROL SAMPLE: 1307210

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lithium, Dissolved	ug/L	80	84.7	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1307211 1307212

Parameter	Units	60130685003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lithium, Dissolved	ug/L	74.7	80	80	160	160	107	107	70-130	.09	20	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130678

QC Batch: MPRP/19854 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60130678001, 60130678002, 60130678003, 60130678004

METHOD BLANK: 1075492 Matrix: Water

Associated Lab Samples: 60130678001, 60130678002, 60130678003, 60130678004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	ug/L	ND	100	10/10/12 14:03	
Iron	ug/L	ND	50.0	10/10/12 14:03	
Magnesium	ug/L	ND	50.0	10/10/12 14:03	
Potassium	ug/L	ND	500	10/10/12 14:03	
Sodium	ug/L	ND	500	10/10/12 14:03	

LABORATORY CONTROL SAMPLE: 1075493

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	9640	96	85-115	
Iron	ug/L	10000	9740	97	85-115	
Magnesium	ug/L	10000	10000	100	85-115	
Potassium	ug/L	10000	10100	101	85-115	
Sodium	ug/L	10000	10400	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1075494 1075495

Parameter	Units	60130678002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	369000	10000	10000	381000	383000	112	134	70-130	1	9	M6
Iron	ug/L	1600000	10000	10000	1610000	1630000	176	336	70-130	1	10	M6
Magnesium	ug/L	215000	10000	10000	227000	228000	122	130	70-130	0	9	
Potassium	ug/L	6760J	10000	10000	16000	16600	93	99	70-130	4	7	
Sodium	ug/L	5420J	10000	10000	15900	16100	104	107	70-130	2	8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130678

QC Batch:	MPRP/19859	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Dissolved
Associated Lab Samples:	60130678001, 60130678002, 60130678003, 60130678004		

METHOD BLANK: 1075546 Matrix: Water

Associated Lab Samples: 60130678001, 60130678002, 60130678003, 60130678004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	10/10/12 14:29	
Iron, Dissolved	ug/L	ND	50.0	10/10/12 14:29	
Magnesium, Dissolved	ug/L	ND	50.0	10/10/12 14:29	
Potassium, Dissolved	ug/L	ND	500	10/10/12 14:29	
Sodium, Dissolved	ug/L	ND	500	10/10/12 14:29	

LABORATORY CONTROL SAMPLE: 1075547

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9760	98	85-115	
Iron, Dissolved	ug/L	10000	9890	99	85-115	
Magnesium, Dissolved	ug/L	10000	10200	102	85-115	
Potassium, Dissolved	ug/L	10000	10200	102	85-115	
Sodium, Dissolved	ug/L	10000	10600	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1075548 1075549

Parameter	Units	60130678002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium, Dissolved	ug/L	365000	10000	10000	381000	369000	152	40	70-130	3	9 M6	
Iron, Dissolved	ug/L	1580000	10000	10000	1620000	1570000	396	-128	70-130	3	10 M6	
Magnesium, Dissolved	ug/L	213000	10000	10000	227000	220000	144	74	70-130	3	9 M6	
Potassium, Dissolved	ug/L	5980J	10000	10000	16700	15700	107	97	70-130	6	7	
Sodium, Dissolved	ug/L	5520J	10000	10000	16100	15500	106	100	70-130	4	8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130678

QC Batch: MPRP/19855 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60130678001, 60130678002, 60130678003, 60130678004

METHOD BLANK: 1075500 Matrix: Water

Associated Lab Samples: 60130678001, 60130678002, 60130678003, 60130678004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	10/11/12 17:53	
Cadmium	ug/L	0.12J	0.50	10/11/12 17:53	
Chromium	ug/L	0.23J	1.0	10/11/12 17:53	
Cobalt	ug/L	0.17J	1.0	10/11/12 17:53	
Copper	ug/L	ND	1.0	10/11/12 17:53	
Lead	ug/L	0.11J	1.0	10/12/12 13:15	
Manganese	ug/L	ND	1.0	10/11/12 17:53	
Nickel	ug/L	ND	1.0	10/11/12 17:53	
Selenium	ug/L	ND	1.0	10/11/12 17:53	
Zinc	ug/L	ND	10.0	10/11/12 17:53	

LABORATORY CONTROL SAMPLE: 1075501

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	43.9	110	85-115	
Cadmium	ug/L	40	42.0	105	85-115	
Chromium	ug/L	40	44.2	110	85-115	
Cobalt	ug/L	40	43.1	108	85-115	
Copper	ug/L	40	43.5	109	85-115	
Lead	ug/L	40	40.7	102	85-115	
Manganese	ug/L	40	42.6	106	85-115	
Nickel	ug/L	40	43.6	109	85-115	
Selenium	ug/L	40	41.4	104	85-115	
Zinc	ug/L	100	114	114	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1075502 1075503

Parameter	Units	60130678001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	3060	40	40	3580	3000	1310	-135	70-130	18	20	M6
Cadmium	ug/L	3170	40	40	3690	3060	1290	-295	70-130	19	20	M6
Chromium	ug/L	294	40	40	396	339	254	112	70-130	15	20	M6
Cobalt	ug/L	495	40	40	627	508	328	32	70-130	21	20	D6,M6
Copper	ug/L	36000	40	40	41800	34700	14300	-3400	70-130	19	20	M6
Lead	ug/L	869	40	40	918	939	122	176	70-130	2	20	M6
Manganese	ug/L	172000	40	40	199000	162000	68900	-22800	70-130	20	20	M6
Nickel	ug/L	574	40	40	710	601	341	68	70-130	17	20	M6
Selenium	ug/L	ND	40	40	73.4J	ND	82	72	70-130		20	
Zinc	ug/L	479000	100	100	558000	456000	78800	-23200	70-130	20	20	M6

Date: 10/19/2012 11:48 AM

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130678

QC Batch: MPRP/19858 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60130678001, 60130678002, 60130678003, 60130678004

METHOD BLANK: 1075542 Matrix: Water

Associated Lab Samples: 60130678001, 60130678002, 60130678003, 60130678004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	10/11/12 16:17	
Cadmium, Dissolved	ug/L	0.12J	0.50	10/11/12 16:17	
Chromium, Dissolved	ug/L	0.23J	1.0	10/11/12 16:17	
Cobalt, Dissolved	ug/L	0.17J	1.0	10/11/12 16:17	
Copper, Dissolved	ug/L	ND	1.0	10/11/12 16:17	
Lead, Dissolved	ug/L	0.32J	1.0	10/11/12 16:17	
Manganese, Dissolved	ug/L	ND	1.0	10/11/12 16:17	
Nickel, Dissolved	ug/L	0.68J	1.0	10/11/12 16:17	
Selenium, Dissolved	ug/L	ND	1.0	10/11/12 16:17	
Zinc, Dissolved	ug/L	ND	10.0	10/11/12 16:17	

LABORATORY CONTROL SAMPLE: 1075543

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	41.9	105	85-115	
Cadmium, Dissolved	ug/L	40	41.2	103	85-115	
Chromium, Dissolved	ug/L	40	42.6	106	85-115	
Cobalt, Dissolved	ug/L	40	41.6	104	85-115	
Copper, Dissolved	ug/L	40	42.3	106	85-115	
Lead, Dissolved	ug/L	40	40.9	102	85-115	
Manganese, Dissolved	ug/L	40	41.6	104	85-115	
Nickel, Dissolved	ug/L	40	41.6	104	85-115	
Selenium, Dissolved	ug/L	40	40.9	102	85-115	
Zinc, Dissolved	ug/L	100	110	110	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1075544 1075545

Parameter	Units	60130678001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	2920	40	40	3000	2960	205	105	70-130	1	20	M6
Cadmium, Dissolved	ug/L	2950	40	40	3060	3010	270	155	70-130	2	20	M6
Chromium, Dissolved	ug/L	295	40	40	341	323	116	71	70-130	5	20	
Cobalt, Dissolved	ug/L	466	40	40	510	507	110	102	70-130	1	20	
Copper, Dissolved	ug/L	33700	40	40	34300	33700	1400	0	70-130	2	20	M6
Lead, Dissolved	ug/L	916	40	40	954	943	95	68	70-130	1	20	M6
Manganese, Dissolved	ug/L	162000	40	40	162000	159000	50	-6000	70-130	2	20	M6
Nickel, Dissolved	ug/L	551	40	40	585	603	85	131	70-130	3	20	M6
Selenium, Dissolved	ug/L	ND	40	40	ND	ND	106	109	70-130		20	
Zinc, Dissolved	ug/L	451000	100	100	454000	448000	3600	-3000	70-130	1	20	M6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130678

QC Batch: WET/37551 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60130678001, 60130678002, 60130678003, 60130678004

METHOD BLANK: 1075788 Matrix: Water

Associated Lab Samples: 60130678001, 60130678002, 60130678003, 60130678004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	10/09/12 08:40	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	10/09/12 08:40	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	10/09/12 08:40	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	10/09/12 08:40	

LABORATORY CONTROL SAMPLE: 1075789

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	492	98	90-110	

SAMPLE DUPLICATE: 1075790

Parameter	Units	60130678001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	ND	ND		9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	ND		9	

SAMPLE DUPLICATE: 1075791

Parameter	Units	60130171037 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	207	206	0	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	207	206	0	9	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130678

QC Batch: WETA/21931 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60130678001, 60130678002, 60130678003, 60130678004

METHOD BLANK: 1075309 Matrix: Water

Associated Lab Samples: 60130678001, 60130678002, 60130678003, 60130678004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	10/07/12 18:28	
Chloride	mg/L	ND	1.0	10/07/12 18:28	
Fluoride	mg/L	ND	0.20	10/07/12 18:28	
Sulfate	mg/L	ND	1.0	10/07/12 18:28	

METHOD BLANK: 1075440 Matrix: Water

Associated Lab Samples: 60130678001, 60130678002, 60130678003, 60130678004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	10/08/12 10:05	
Chloride	mg/L	ND	1.0	10/08/12 10:05	
Fluoride	mg/L	ND	0.20	10/08/12 10:05	
Sulfate	mg/L	ND	1.0	10/08/12 10:05	

LABORATORY CONTROL SAMPLE: 1075310

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.8	97	90-110	
Chloride	mg/L	5	4.5	90	90-110	
Fluoride	mg/L	2.5	2.4	95	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

LABORATORY CONTROL SAMPLE: 1075441

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.9	97	90-110	
Chloride	mg/L	5	4.5	91	90-110	
Fluoride	mg/L	2.5	2.4	96	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE SAMPLE: 1075311

Parameter	Units	60129960001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	2500	2370	95	75-119	
Chloride	mg/L	551	2500	2980	97	64-118	
Fluoride	mg/L	ND	1250	1170	94	75-110	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130678

MATRIX SPIKE SAMPLE:		1075311					
Parameter	Units	60129960001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	4450	2500	6880	97	61-119	

MATRIX SPIKE SAMPLE:		1075312					
Parameter	Units	60129960002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	250	237	95	75-119	
Chloride	mg/L	63.7	250	296	93	64-118	
Fluoride	mg/L	ND	125	118	94	75-110	
Sulfate	mg/L	399	250	646	99	61-119	

QUALIFIERS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130678

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

PASI-M Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

D6 The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130678

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60130678001	BLAINEOBF121004	EPA 200.7	MPRP/19854	EPA 200.7	ICP/16332
60130678002	BLAINEIBF121004	EPA 200.7	MPRP/19854	EPA 200.7	ICP/16332
60130678003	517SHAFT452121004	EPA 200.7	MPRP/19854	EPA 200.7	ICP/16332
60130678004	517SHAFT529121004	EPA 200.7	MPRP/19854	EPA 200.7	ICP/16332
60130678001	BLAINEOBF121004	EPA 200.7	MPRP/19859	EPA 200.7	ICP/16331
60130678002	BLAINEIBF121004	EPA 200.7	MPRP/19859	EPA 200.7	ICP/16331
60130678003	517SHAFT452121004	EPA 200.7	MPRP/19859	EPA 200.7	ICP/16331
60130678004	517SHAFT529121004	EPA 200.7	MPRP/19859	EPA 200.7	ICP/16331
60130678001	BLAINEOBF121004	EPA 200.8	MPRP/19855	EPA 200.8	ICPM/1697
60130678002	BLAINEIBF121004	EPA 200.8	MPRP/19855	EPA 200.8	ICPM/1697
60130678003	517SHAFT452121004	EPA 200.8	MPRP/19855	EPA 200.8	ICPM/1697
60130678004	517SHAFT529121004	EPA 200.8	MPRP/19855	EPA 200.8	ICPM/1697
60130678001	BLAINEOBF121004	EPA 200.8	ICPM/35658	EPA 200.8	ICPM/14075
60130678001	BLAINEOBF121004	EPA 200.8	MPRP/19858	EPA 200.8	ICPM/1696
60130678002	BLAINEIBF121004	EPA 200.8	ICPM/35658	EPA 200.8	ICPM/14075
60130678002	BLAINEIBF121004	EPA 200.8	MPRP/19858	EPA 200.8	ICPM/1696
60130678003	517SHAFT452121004	EPA 200.8	ICPM/35658	EPA 200.8	ICPM/14075
60130678003	517SHAFT452121004	EPA 200.8	MPRP/19858	EPA 200.8	ICPM/1696
60130678004	517SHAFT529121004	EPA 200.8	ICPM/35658	EPA 200.8	ICPM/14075
60130678004	517SHAFT529121004	EPA 200.8	MPRP/19858	EPA 200.8	ICPM/1696
60130678001	BLAINEOBF121004	SM 2320B	WET/37551		
60130678002	BLAINEIBF121004	SM 2320B	WET/37551		
60130678003	517SHAFT452121004	SM 2320B	WET/37551		
60130678004	517SHAFT529121004	SM 2320B	WET/37551		
60130678001	BLAINEOBF121004	EPA 300.0	WETA/21931		
60130678002	BLAINEIBF121004	EPA 300.0	WETA/21931		
60130678003	517SHAFT452121004	EPA 300.0	WETA/21931		
60130678004	517SHAFT529121004	EPA 300.0	WETA/21931		



Laboratory Management Program LaMP Chain of Custody Record

Page 1 of 1

BP/ARC Project Name: Rico-Argentine Mine Site

Req Due Date (mm/dd/yy): Rush TAT: Yes No

BP/ARC Facility No:

Lab Work Order Number:

Lab Name: Pace Analytical Laboratories, Inc.				BP/ARC Facility Address: Rico-Argentine Mine				Consultant/Contractor: AMEC E&I, Inc.																
Lab Address: 9608 Loiret Blvd., Lenexa, KS 66219				City, State, ZIP Code: Rico, Colorado				Consultant/Contractor Project No: SA11161302.200B																
Lab PM: Heather Wilson				Lead Regulatory Agency: U.S. EPA Region 8				Address: 10670 White Rock Road, Suite 100, Rancho Cordova, CA																
Lab Phone: (913) 563-1407				California Global ID No.: NA				Consultant/Contractor PM: Marc Lombardi																
Lab Shipping Acct: UPS # 733W87				Enfos Proposal No: D009D-0024 (WR 251660)				Phone: 916-636-3200																
Lab Bottle Order No: NA				Accounting Mode: Provision <input checked="" type="checkbox"/> OOC-BU <input type="checkbox"/> OOC-RM <input type="checkbox"/>				Email Report/EDD To: lynda.lombardi@amec.com																
Other Info: 517 Injection Treatability Study - CHARACTERIZATION SAMPLES				Stage: 4-Execute Activity: Spend				Invoice To: BP/ARC <input checked="" type="checkbox"/> Contractor <input type="checkbox"/>																
BP/ARC EBM: Anthony Brown				Matrix No. Containers / Preservative				Requested Analyses				Report Type & QC Level												
EBM Phone: 714-228-6770												Standard <input checked="" type="checkbox"/>												
EBM Email: anthony.brown@bp.com												Full Data Package <input type="checkbox"/>												
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	RUSH	Tot Metals-see notes (E200.7/200.8)	Dis Metals-see notes (E200.7/200.8)	Alkalinity-Total, HCO ₃ , CO ₃ , OH (SM2320B)	Sulfate (E300.0)	Chloride (E300.0)	Bromide (E300.0)	Fluoride (E300.0)	Dissolved Lithium (E200.7)	MS/MSD	HOLD	Comments	
	BLAINEDBF121004	10/4/12	09:39	X	BP14		4	1	0	3	0		X	X	X	X	X	X	X	X	X	2BP34		Dissolved metals are field filtered. 001
	BLAINEDBF121004	10/4/12	09:49	X			4	1	0	3	0		X	X	X	X	X	X	X	X				012
	517SHAFT452121004	10/4/12	1200	X			4	1	0	3	0		X	X	X	X	X	X	X	X				Metals are: Ca, Fe, K, Na, Mg 003
	517SHAFT529121004	10/4/12	12:30	X	↓		4	1	0	3	0		X	X	X	X	X	X	X	X	↓			(E200.7); As, Cd, Co, Cr, Cu, Mn, Ni 004
																								Pb, Se, Zn (E200.8)
																								RUSH SAMPLES - 48 HR TURN-AROUND
Relinquished By / Affiliation				Date				Time				Accepted By / Affiliation				Date				Time				
Relinquished By / Affiliation: Abby Cazier / AMEC				Date: 10/5/12				Time: 1330				Accepted By / Affiliation: Benell CK				Date: 10-12				Time: 0910				
Shipment Method: UPS				Ship Date: 10/4/12																				
Shipment Tracking No: 1Z733W87 2210056065																								

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes ☒ No ☐ Temp Blank: Yes ☒ No ☐ Cooler Temp on Receipt: 1.2 °F/C Trip Blank: Yes ☒ No ☐ MS/MSD Sample Submitted: Yes ☒ No ☐



Sample Condition Upon Receipt – ESI Tech Specs

Client Name: BP Amec

Project #: 60130678

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 1Z 733 087 22 1005 6065

Pace Shipping Label Used? Yes ☒ No ☐

Optional

Proj Due Date: 10/10

Proj Name:

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☒ 2PLC

Thermometer Used: T-191 / T-194

Type of Ice: Wet Blue ☐ None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 1.2

Date and initials of person examining contents: 10-6-12 BA

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7. <u>48 hr</u>
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Includes date/time/ID/analyses Matrix: <u>WT</u>		13.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
		16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State: <u>NC</u>

Client Notification/ Resolution:

Copy COC to Client? Y ☒ N ☐

Field Data Required? Y ☐ N ☐

Person Contacted: _____

Date/Time: _____

Comments/ Resolution: _____

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: 0940 Start:

End: 0950 End:

Temp: _____ Temp:

Project Manager Review: [Signature]

Date: 10/8/12

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the NCDENR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

October 23, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60130685

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on October 06, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130685

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414

A2LA Certification #: 2926.01

Alaska Certification #: UST-078

Alaska Certification #MN00064

Arizona Certification #: AZ-0014

Arkansas Certification #: 88-0680

California Certification #: 01155CA

Colorado Certification #Pace

Connecticut Certification #: PH-0256

EPA Region 8 Certification #: Pace

Florida/NELAP Certification #: E87605

Georgia Certification #: 959

Hawaii Certification #Pace

Idaho Certification #: MN00064

Illinois Certification #: 200011

Kansas Certification #: E-10167

Louisiana Certification #: 03086

Louisiana Certification #: LA080009

Maine Certification #: 2007029

Maryland Certification #: 322

Michigan DEQ Certification #: 9909

Minnesota Certification #: 027-053-137

Mississippi Certification #: Pace

Montana Certification #: MT CERT0092

Nevada Certification #: MN_00064

Nebraska Certification #: Pace

New Jersey Certification #: MN-002

New York Certification #: 11647

North Carolina Certification #: 530

North Dakota Certification #: R-036

North Dakota Certification #: R-036A

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Certification #: MN200001

Oregon Certification #: MN300001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification

Tennessee Certification #: 02818

Texas Certification #: T104704192

Utah Certification #: MN00064

Virginia/DCLS Certification #: 002521

Virginia/VELAP Certification #: 460163

Washington Certification #: C754

West Virginia Certification #: 382

Wisconsin Certification #: 999407970

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

SAMPLE SUMMARY

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130685

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60130685003	DR3A1210041800	Water	10/04/12 18:00	10/06/12 09:10
60130685009	DR3A1210050800	Water	10/05/12 08:00	10/06/12 09:10

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130685

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60130685003	DR3A1210041800	EPA 200.7	JGP	5	PASI-K
		EPA 200.7	JGP	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	AS2	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60130685009	DR3A1210050800	EPA 200.7	JGP	5	PASI-K
		EPA 200.7	JGP	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	AS2	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K

REPORT OF LABORATORY ANALYSIS

Page 4 of 26

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130685

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: October 23, 2012

General Information:

2 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130685

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: October 23, 2012

General Information:

2 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

Page 6 of 26

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60130685

Method: EPA 200.8
Description: 200.8 MET ICPMS
Client: BP AMEC
Date: October 23, 2012

General Information:

2 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19855

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60130678001

D6: The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.

- MSD (Lab ID: 1075503)
- Cobalt

Additional Comments:

Analyte Comments:

QC Batch: MPRP/19855

B: Analyte was detected in the associated method blank.

- DR3A1210041800 (Lab ID: 60130685003)
 - Cadmium
 - Cobalt
 - Chromium
 - Lead

REPORT OF LABORATORY ANALYSIS

Page 7 of 26

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130685

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: October 23, 2012

Analyte Comments:

QC Batch: MPRP/19855

B: Analyte was detected in the associated method blank.

- DR3A1210050800 (Lab ID: 60130685009)
 - Cadmium
 - Cobalt
 - Chromium
 - Lead

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210041800 (Lab ID: 60130685003)
 - Selenium
- DR3A1210050800 (Lab ID: 60130685009)
 - Selenium

REPORT OF LABORATORY ANALYSIS

Page 8 of 26

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130685

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: October 23, 2012

General Information:

2 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/19858

B: Analyte was detected in the associated method blank.

- DR3A1210041800 (Lab ID: 60130685003)
 - Cadmium, Dissolved
 - Cobalt, Dissolved
 - Chromium, Dissolved
 - Nickel, Dissolved
 - Lead, Dissolved
- DR3A1210050800 (Lab ID: 60130685009)
 - Arsenic, Dissolved
 - Cadmium, Dissolved
 - Cobalt, Dissolved
 - Chromium, Dissolved

REPORT OF LABORATORY ANALYSIS

Page 9 of 26

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130685

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: October 23, 2012

Analyte Comments:

QC Batch: MPRP/19858

B: Analyte was detected in the associated method blank.

- DR3A1210050800 (Lab ID: 60130685009)
 - Nickel, Dissolved
 - Lead, Dissolved

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210041800 (Lab ID: 60130685003)
 - Copper, Dissolved
 - Selenium, Dissolved
- DR3A1210050800 (Lab ID: 60130685009)
 - Copper, Dissolved
 - Selenium, Dissolved
- DR3A1210041800 (Lab ID: 60130685003)
 - Arsenic, Dissolved

REPORT OF LABORATORY ANALYSIS

Page 10 of 26

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130685

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: October 23, 2012

General Information:

2 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60130685

Method: EPA 300.0
Description: 300.0 IC Anions 28 Days
Client: BP AMEC
Date: October 23, 2012

General Information:

2 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130685

Sample: DR3A1210041800 Lab ID: 60130685003 Collected: 10/04/12 18:00 Received: 10/06/12 09:10 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	228000	ug/L	100	35.8	1	10/08/12 11:50	10/10/12 14:22	7440-70-2	
Iron	3750	ug/L	50.0	17.2	1	10/08/12 11:50	10/10/12 14:22	7439-89-6	
Magnesium	19600	ug/L	50.0	17.2	1	10/08/12 11:50	10/10/12 14:22	7439-95-4	
Potassium	17200	ug/L	500	64.1	1	10/08/12 11:50	10/10/12 14:22	7440-09-7	
Sodium	11400	ug/L	500	40.1	1	10/08/12 11:50	10/10/12 14:22	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	228000	ug/L	100	35.8	1	10/08/12 11:50	10/10/12 14:53	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	17.2	1	10/08/12 11:50	10/10/12 14:53	7439-89-6	
Magnesium, Dissolved	19800	ug/L	50.0	17.2	1	10/08/12 11:50	10/10/12 14:53	7439-95-4	D9
Potassium, Dissolved	17400	ug/L	500	64.1	1	10/08/12 11:50	10/10/12 14:53	7440-09-7	D9
Sodium, Dissolved	11600	ug/L	500	40.1	1	10/08/12 11:50	10/10/12 14:53	7440-23-5	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.6J	ug/L	10.0	1.4	10	10/08/12 11:50	10/11/12 18:25	7440-38-2	
Cadmium	21.9	ug/L	5.0	0.97	10	10/08/12 11:50	10/11/12 18:25	7440-43-9	B
Chromium	2.6J	ug/L	10.0	1.1	10	10/08/12 11:50	10/11/12 18:25	7440-47-3	B
Cobalt	4.5J	ug/L	10.0	0.48	10	10/08/12 11:50	10/11/12 18:25	7440-48-4	B
Copper	42.9	ug/L	10.0	4.5	10	10/08/12 11:50	10/11/12 18:25	7440-50-8	
Lead	2.7J	ug/L	10.0	0.51	10	10/08/12 11:50	10/12/12 13:48	7439-92-1	B
Manganese	1970	ug/L	10.0	2.3	10	10/08/12 11:50	10/11/12 18:25	7439-96-5	
Nickel	4.8J	ug/L	10.0	3.5	10	10/08/12 11:50	10/11/12 18:25	7440-02-0	
Selenium	ND	ug/L	10.0	3.5	10	10/08/12 11:50	10/11/12 18:25	7782-49-2	D3
Zinc	3940	ug/L	100	16.0	10	10/08/12 11:50	10/11/12 18:25	7440-66-6	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	74.7	ug/L	0.50	0.11	1	10/11/12 12:40	10/12/12 18:36	7439-93-2	
Arsenic, Dissolved	1.5J	ug/L	10.0	1.4	10	10/08/12 11:50	10/11/12 16:33	7440-38-2	
Cadmium, Dissolved	19.3	ug/L	5.0	0.97	10	10/08/12 11:50	10/11/12 16:33	7440-43-9	B
Chromium, Dissolved	2.6J	ug/L	10.0	1.1	10	10/08/12 11:50	10/11/12 16:33	7440-47-3	B
Cobalt, Dissolved	4.5J	ug/L	10.0	0.48	10	10/08/12 11:50	10/11/12 16:33	7440-48-4	B
Copper, Dissolved	ND	ug/L	10.0	4.5	10	10/08/12 11:50	10/11/12 16:33	7440-50-8	D3
Lead, Dissolved	3.2J	ug/L	10.0	0.51	10	10/08/12 11:50	10/11/12 16:33	7439-92-1	B
Manganese, Dissolved	1970	ug/L	10.0	2.3	10	10/08/12 11:50	10/11/12 16:33	7439-96-5	
Nickel, Dissolved	4.3J	ug/L	10.0	3.5	10	10/08/12 11:50	10/11/12 16:33	7440-02-0	B
Selenium, Dissolved	ND	ug/L	10.0	3.5	10	10/08/12 11:50	10/11/12 16:33	7782-49-2	D3
Zinc, Dissolved	3730	ug/L	100	16.0	10	10/08/12 11:50	10/11/12 16:33	7440-66-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	103	mg/L	20.0	1.2	1		10/10/12 10:04		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/10/12 10:04		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/10/12 10:04		
Alkalinity, Total as CaCO3	103	mg/L	20.0	1.2	1		10/10/12 10:04		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130685

Sample: DR3A1210041800		Lab ID: 60130685003		Collected: 10/04/12 18:00		Received: 10/06/12 09:10		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.078	1		10/07/12 15:53	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		10/07/12 15:53	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/07/12 15:53	16984-48-8	
Sulfate	664	mg/L	100	12.0	100		10/08/12 11:08	14808-79-8	

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130685

Sample: DR3A1210050800 Lab ID: 60130685009 Collected: 10/05/12 08:00 Received: 10/06/12 09:10 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	229000	ug/L	100	35.8	1	10/08/12 11:50	10/10/12 14:31	7440-70-2	
Iron	3920	ug/L	50.0	17.2	1	10/08/12 11:50	10/10/12 14:31	7439-89-6	
Magnesium	19700	ug/L	50.0	17.2	1	10/08/12 11:50	10/10/12 14:31	7439-95-4	
Potassium	18000	ug/L	500	64.1	1	10/08/12 11:50	10/10/12 14:31	7440-09-7	
Sodium	11400	ug/L	500	40.1	1	10/08/12 11:50	10/10/12 14:31	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	225000	ug/L	100	35.8	1	10/08/12 11:50	10/10/12 14:55	7440-70-2	
Iron, Dissolved	173	ug/L	50.0	17.2	1	10/08/12 11:50	10/10/12 14:55	7439-89-6	
Magnesium, Dissolved	19600	ug/L	50.0	17.2	1	10/08/12 11:50	10/10/12 14:55	7439-95-4	
Potassium, Dissolved	18000	ug/L	500	64.1	1	10/08/12 11:50	10/10/12 14:55	7440-09-7	
Sodium, Dissolved	11400	ug/L	500	40.1	1	10/08/12 11:50	10/10/12 14:55	7440-23-5	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.9J	ug/L	10.0	1.4	10	10/08/12 11:50	10/11/12 18:29	7440-38-2	
Cadmium	20.6	ug/L	5.0	0.97	10	10/08/12 11:50	10/11/12 18:29	7440-43-9	B
Chromium	2.6J	ug/L	10.0	1.1	10	10/08/12 11:50	10/11/12 18:29	7440-47-3	B
Cobalt	4.8J	ug/L	10.0	0.48	10	10/08/12 11:50	10/11/12 18:29	7440-48-4	B
Copper	45.6	ug/L	10.0	4.5	10	10/08/12 11:50	10/11/12 18:29	7440-50-8	
Lead	2.7J	ug/L	10.0	0.51	10	10/08/12 11:50	10/12/12 13:52	7439-92-1	B
Manganese	1990	ug/L	10.0	2.3	10	10/08/12 11:50	10/11/12 18:29	7439-96-5	
Nickel	4.6J	ug/L	10.0	3.5	10	10/08/12 11:50	10/11/12 18:29	7440-02-0	
Selenium	ND	ug/L	10.0	3.5	10	10/08/12 11:50	10/11/12 18:29	7782-49-2	D3
Zinc	4040	ug/L	100	16.0	10	10/08/12 11:50	10/11/12 18:29	7440-66-6	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	81.6	ug/L	2.5	0.56	5	10/11/12 12:40	10/12/12 19:06	7439-93-2	
Arsenic, Dissolved	1.6J	ug/L	10.0	1.4	10	10/08/12 11:50	10/11/12 16:37	7440-38-2	B
Cadmium, Dissolved	18.9	ug/L	5.0	0.97	10	10/08/12 11:50	10/11/12 16:37	7440-43-9	B
Chromium, Dissolved	2.6J	ug/L	10.0	1.1	10	10/08/12 11:50	10/11/12 16:37	7440-47-3	B
Cobalt, Dissolved	4.7J	ug/L	10.0	0.48	10	10/08/12 11:50	10/11/12 16:37	7440-48-4	B
Copper, Dissolved	ND	ug/L	10.0	4.5	10	10/08/12 11:50	10/11/12 16:37	7440-50-8	D3
Lead, Dissolved	3.2J	ug/L	10.0	0.51	10	10/08/12 11:50	10/11/12 16:37	7439-92-1	B
Manganese, Dissolved	1940	ug/L	10.0	2.3	10	10/08/12 11:50	10/11/12 16:37	7439-96-5	
Nickel, Dissolved	4.3J	ug/L	10.0	3.5	10	10/08/12 11:50	10/11/12 16:37	7440-02-0	B
Selenium, Dissolved	ND	ug/L	10.0	3.5	10	10/08/12 11:50	10/11/12 16:37	7782-49-2	D3
Zinc, Dissolved	3700	ug/L	100	16.0	10	10/08/12 11:50	10/11/12 16:37	7440-66-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	97.4	mg/L	20.0	1.2	1		10/10/12 10:09		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/10/12 10:09		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/10/12 10:09		
Alkalinity, Total as CaCO3	97.4	mg/L	20.0	1.2	1		10/10/12 10:09		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130685

Sample: DR3A1210050800		Lab ID: 60130685009		Collected: 10/05/12 08:00		Received: 10/06/12 09:10		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.078	1		10/07/12 16:24	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		10/07/12 16:24	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/07/12 16:24	16984-48-8	
Sulfate	633	mg/L	100	12.0	100		10/08/12 11:23	14808-79-8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130685

QC Batch: ICPM/35658

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60130685003, 60130685009

METHOD BLANK: 1307209

Matrix: Water

Associated Lab Samples: 60130685003, 60130685009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lithium, Dissolved	ug/L	ND	0.50	10/12/12 18:23	

LABORATORY CONTROL SAMPLE: 1307210

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lithium, Dissolved	ug/L	80	84.7	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1307211

1307212

Parameter	Units	60130685003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lithium, Dissolved	ug/L	74.7	80	80	160	160	107	107	70-130	.09	20	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130685

QC Batch: MPRP/19854

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60130685003, 60130685009

METHOD BLANK: 1075492

Matrix: Water

Associated Lab Samples: 60130685003, 60130685009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	ug/L	ND	100	10/10/12 14:03	
Iron	ug/L	ND	50.0	10/10/12 14:03	
Magnesium	ug/L	ND	50.0	10/10/12 14:03	
Potassium	ug/L	ND	500	10/10/12 14:03	
Sodium	ug/L	ND	500	10/10/12 14:03	

LABORATORY CONTROL SAMPLE: 1075493

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	9640	96	85-115	
Iron	ug/L	10000	9740	97	85-115	
Magnesium	ug/L	10000	10000	100	85-115	
Potassium	ug/L	10000	10100	101	85-115	
Sodium	ug/L	10000	10400	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1075494

1075495

Parameter	Units	60130678002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	369000	10000	10000	381000	383000	112	134	70-130	1	9	M6
Iron	ug/L	1600000	10000	10000	1610000	1630000	176	336	70-130	1	10	M6
Magnesium	ug/L	215000	10000	10000	227000	228000	122	130	70-130	0	9	
Potassium	ug/L	6760J	10000	10000	16000	16600	93	99	70-130	4	7	
Sodium	ug/L	5420J	10000	10000	15900	16100	104	107	70-130	2	8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130685

QC Batch: MPRP/19859

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60130685003, 60130685009

METHOD BLANK: 1075546

Matrix: Water

Associated Lab Samples: 60130685003, 60130685009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	10/10/12 14:29	
Iron, Dissolved	ug/L	ND	50.0	10/10/12 14:29	
Magnesium, Dissolved	ug/L	ND	50.0	10/10/12 14:29	
Potassium, Dissolved	ug/L	ND	500	10/10/12 14:29	
Sodium, Dissolved	ug/L	ND	500	10/10/12 14:29	

LABORATORY CONTROL SAMPLE: 1075547

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9760	98	85-115	
Iron, Dissolved	ug/L	10000	9890	99	85-115	
Magnesium, Dissolved	ug/L	10000	10200	102	85-115	
Potassium, Dissolved	ug/L	10000	10200	102	85-115	
Sodium, Dissolved	ug/L	10000	10600	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1075548

1075549

Parameter	Units	60130678002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium, Dissolved	ug/L	365000	10000	10000	381000	369000	152	40	70-130	3	9 M6	
Iron, Dissolved	ug/L	1580000	10000	10000	1620000	1570000	396	-128	70-130	3	10 M6	
Magnesium, Dissolved	ug/L	213000	10000	10000	227000	220000	144	74	70-130	3	9 M6	
Potassium, Dissolved	ug/L	5980J	10000	10000	16700	15700	107	97	70-130	6	7	
Sodium, Dissolved	ug/L	5520J	10000	10000	16100	15500	106	100	70-130	4	8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130685

QC Batch: MPRP/19855 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60130685003, 60130685009

METHOD BLANK: 1075500 Matrix: Water

Associated Lab Samples: 60130685003, 60130685009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	10/11/12 17:53	
Cadmium	ug/L	0.12J	0.50	10/11/12 17:53	
Chromium	ug/L	0.23J	1.0	10/11/12 17:53	
Cobalt	ug/L	0.17J	1.0	10/11/12 17:53	
Copper	ug/L	ND	1.0	10/11/12 17:53	
Lead	ug/L	0.11J	1.0	10/12/12 13:15	
Manganese	ug/L	ND	1.0	10/11/12 17:53	
Nickel	ug/L	ND	1.0	10/11/12 17:53	
Selenium	ug/L	ND	1.0	10/11/12 17:53	
Zinc	ug/L	ND	10.0	10/11/12 17:53	

LABORATORY CONTROL SAMPLE: 1075501

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	43.9	110	85-115	
Cadmium	ug/L	40	42.0	105	85-115	
Chromium	ug/L	40	44.2	110	85-115	
Cobalt	ug/L	40	43.1	108	85-115	
Copper	ug/L	40	43.5	109	85-115	
Lead	ug/L	40	40.7	102	85-115	
Manganese	ug/L	40	42.6	106	85-115	
Nickel	ug/L	40	43.6	109	85-115	
Selenium	ug/L	40	41.4	104	85-115	
Zinc	ug/L	100	114	114	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1075502 1075503

Parameter	Units	60130678001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	3060	40	40	3580	3000	1310	-135	70-130	18	20	M6
Cadmium	ug/L	3170	40	40	3690	3060	1290	-295	70-130	19	20	M6
Chromium	ug/L	294	40	40	396	339	254	112	70-130	15	20	M6
Cobalt	ug/L	495	40	40	627	508	328	32	70-130	21	20	D6,M6
Copper	ug/L	36000	40	40	41800	34700	14300	-3400	70-130	19	20	M6
Lead	ug/L	869	40	40	918	939	122	176	70-130	2	20	M6
Manganese	ug/L	172000	40	40	199000	162000	68900	-22800	70-130	20	20	M6
Nickel	ug/L	574	40	40	710	601	341	68	70-130	17	20	M6
Selenium	ug/L	ND	40	40	73.4J	ND	82	72	70-130		20	
Zinc	ug/L	479000	100	100	558000	456000	78800	-23200	70-130	20	20	M6

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130685

QC Batch: MPRP/19858

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60130685003, 60130685009

METHOD BLANK: 1075542

Matrix: Water

Associated Lab Samples: 60130685003, 60130685009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	10/11/12 16:17	
Cadmium, Dissolved	ug/L	0.12J	0.50	10/11/12 16:17	
Chromium, Dissolved	ug/L	0.23J	1.0	10/11/12 16:17	
Cobalt, Dissolved	ug/L	0.17J	1.0	10/11/12 16:17	
Copper, Dissolved	ug/L	ND	1.0	10/11/12 16:17	
Lead, Dissolved	ug/L	0.32J	1.0	10/11/12 16:17	
Manganese, Dissolved	ug/L	ND	1.0	10/11/12 16:17	
Nickel, Dissolved	ug/L	0.68J	1.0	10/11/12 16:17	
Selenium, Dissolved	ug/L	ND	1.0	10/11/12 16:17	
Zinc, Dissolved	ug/L	ND	10.0	10/11/12 16:17	

LABORATORY CONTROL SAMPLE: 1075543

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	41.9	105	85-115	
Cadmium, Dissolved	ug/L	40	41.2	103	85-115	
Chromium, Dissolved	ug/L	40	42.6	106	85-115	
Cobalt, Dissolved	ug/L	40	41.6	104	85-115	
Copper, Dissolved	ug/L	40	42.3	106	85-115	
Lead, Dissolved	ug/L	40	40.9	102	85-115	
Manganese, Dissolved	ug/L	40	41.6	104	85-115	
Nickel, Dissolved	ug/L	40	41.6	104	85-115	
Selenium, Dissolved	ug/L	40	40.9	102	85-115	
Zinc, Dissolved	ug/L	100	110	110	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1075544

1075545

Parameter	Units	60130678001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	2920	40	40	3000	2960	205	105	70-130	1	20	M6
Cadmium, Dissolved	ug/L	2950	40	40	3060	3010	270	155	70-130	2	20	M6
Chromium, Dissolved	ug/L	295	40	40	341	323	116	71	70-130	5	20	
Cobalt, Dissolved	ug/L	466	40	40	510	507	110	102	70-130	1	20	
Copper, Dissolved	ug/L	33700	40	40	34300	33700	1400	0	70-130	2	20	M6
Lead, Dissolved	ug/L	916	40	40	954	943	95	68	70-130	1	20	M6
Manganese, Dissolved	ug/L	162000	40	40	162000	159000	50	-6000	70-130	2	20	M6
Nickel, Dissolved	ug/L	551	40	40	585	603	85	131	70-130	3	20	M6
Selenium, Dissolved	ug/L	ND	40	40	ND	ND	106	109	70-130		20	
Zinc, Dissolved	ug/L	451000	100	100	454000	448000	3600	-3000	70-130	1	20	M6

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130685

QC Batch: WET/37584

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60130685003, 60130685009

METHOD BLANK: 1076387

Matrix: Water

Associated Lab Samples: 60130685003, 60130685009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	10/10/12 08:47	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	10/10/12 08:47	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	10/10/12 08:47	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	10/10/12 08:47	

LABORATORY CONTROL SAMPLE: 1076388

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	482	96	90-110	

SAMPLE DUPLICATE: 1076389

Parameter	Units	60130401001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	658	676	3	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	658	676	3	9	

SAMPLE DUPLICATE: 1076390

Parameter	Units	60130769024 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	110	109	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	110	109	1	9	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130685

QC Batch: WETA/21931

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60130685003, 60130685009

METHOD BLANK: 1075309

Matrix: Water

Associated Lab Samples: 60130685003, 60130685009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	10/07/12 18:28	
Chloride	mg/L	ND	1.0	10/07/12 18:28	
Fluoride	mg/L	ND	0.20	10/07/12 18:28	
Sulfate	mg/L	ND	1.0	10/07/12 18:28	

METHOD BLANK: 1075440

Matrix: Water

Associated Lab Samples: 60130685003, 60130685009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	10/08/12 10:05	
Chloride	mg/L	ND	1.0	10/08/12 10:05	
Fluoride	mg/L	ND	0.20	10/08/12 10:05	
Sulfate	mg/L	ND	1.0	10/08/12 10:05	

LABORATORY CONTROL SAMPLE: 1075310

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.8	97	90-110	
Chloride	mg/L	5	4.5	90	90-110	
Fluoride	mg/L	2.5	2.4	95	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

LABORATORY CONTROL SAMPLE: 1075441

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.9	97	90-110	
Chloride	mg/L	5	4.5	91	90-110	
Fluoride	mg/L	2.5	2.4	96	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE SAMPLE: 1075311

Parameter	Units	60129960001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	2500	2370	95	75-119	
Chloride	mg/L	551	2500	2980	97	64-118	
Fluoride	mg/L	ND	1250	1170	94	75-110	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130685

MATRIX SPIKE SAMPLE:		1075311					
Parameter	Units	60129960001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	4450	2500	6880	97	61-119	

MATRIX SPIKE SAMPLE:		1075312					
Parameter	Units	60129960002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	250	237	95	75-119	
Chloride	mg/L	63.7	250	296	93	64-118	
Fluoride	mg/L	ND	125	118	94	75-110	
Sulfate	mg/L	399	250	646	99	61-119	

QUALIFIERS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130685

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

PASI-M Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

D6 The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130685

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60130685003	DR3A1210041800	EPA 200.7	MPRP/19854	EPA 200.7	ICP/16332
60130685009	DR3A1210050800	EPA 200.7	MPRP/19854	EPA 200.7	ICP/16332
60130685003	DR3A1210041800	EPA 200.7	MPRP/19859	EPA 200.7	ICP/16331
60130685009	DR3A1210050800	EPA 200.7	MPRP/19859	EPA 200.7	ICP/16331
60130685003	DR3A1210041800	EPA 200.8	MPRP/19855	EPA 200.8	ICPM/1697
60130685009	DR3A1210050800	EPA 200.8	MPRP/19855	EPA 200.8	ICPM/1697
60130685003	DR3A1210041800	EPA 200.8	ICPM/35658	EPA 200.8	ICPM/14075
60130685003	DR3A1210041800	EPA 200.8	MPRP/19858	EPA 200.8	ICPM/1696
60130685009	DR3A1210050800	EPA 200.8	ICPM/35658	EPA 200.8	ICPM/14075
60130685009	DR3A1210050800	EPA 200.8	MPRP/19858	EPA 200.8	ICPM/1696
60130685003	DR3A1210041800	SM 2320B	WET/37584		
60130685009	DR3A1210050800	SM 2320B	WET/37584		
60130685003	DR3A1210041800	EPA 300.0	WETA/21931		
60130685009	DR3A1210050800	EPA 300.0	WETA/21931		

October 22, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60130769

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on October 09, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130769

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: Pace
Florida/NELAP Certification #: E87605
Georgia Certification #: 959
Hawaii Certification #Pace
Idaho Certification #: MN00064
Illinois Certification #: 200011
Kansas Certification #: E-10167
Louisiana Certification #: 03086
Louisiana Certification #: LA080009
Maine Certification #: 2007029
Maryland Certification #: 322
Michigan DEQ Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace

Montana Certification #: MT CERT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Dakota Certification #: R-036
North Dakota Certification #: R-036A
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Tennessee Certification #: 02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia/DCLS Certification #: 002521
Virginia/VELAP Certification #: 460163
Washington Certification #: C754
West Virginia Certification #: 382
Wisconsin Certification #: 999407970

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
A2LA Certification #: 2456.01
Arkansas Certification #: 12-019-0
Illinois Certification #: 002885
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-12-3
Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130769

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60130769008	DR3A1210060900	Water	10/06/12 09:00	10/09/12 10:30
60130769016	DR3A1210070900	Water	10/07/12 09:00	10/09/12 10:30
60130769024	DR3A1210080900	Water	10/08/12 09:00	10/09/12 10:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130769

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60130769008	DR3A1210060900	EPA 200.7	JGP	5	PASI-K
		EPA 200.7	JGP	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	AS2	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60130769016	DR3A1210070900	EPA 200.7	JGP	5	PASI-K
		EPA 200.7	JGP	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	AS2	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60130769024	DR3A1210080900	EPA 200.7	JGP	5	PASI-K
		EPA 200.7	JGP	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	AS2	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130769

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: October 22, 2012

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130769

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: October 22, 2012

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130769

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: October 22, 2012

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/19880

B: Analyte was detected in the associated method blank.

- DR3A1210060900 (Lab ID: 60130769008)
 - Lead
- DR3A1210070900 (Lab ID: 60130769016)
 - Lead
- DR3A1210080900 (Lab ID: 60130769024)
 - Lead

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210060900 (Lab ID: 60130769008)
 - Arsenic
 - Nickel
 - Selenium

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130769

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: October 22, 2012

Analyte Comments:

QC Batch: MPRP/19880

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210060900 (Lab ID: 60130769008)
 - Chromium
- DR3A1210070900 (Lab ID: 60130769016)
 - Arsenic
 - Chromium
 - Nickel
 - Selenium
- DR3A1210080900 (Lab ID: 60130769024)
 - Arsenic
 - Chromium
 - Nickel
 - Selenium

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60130769

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: October 22, 2012

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/19879

B: Analyte was detected in the associated method blank.

- DR3A1210060900 (Lab ID: 60130769008)
 - Lead, Dissolved
- DR3A1210070900 (Lab ID: 60130769016)
 - Lead, Dissolved
- DR3A1210080900 (Lab ID: 60130769024)
 - Lead, Dissolved

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210060900 (Lab ID: 60130769008)
 - Arsenic, Dissolved
 - Chromium, Dissolved
 - Copper, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130769

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: October 22, 2012

Analyte Comments:

QC Batch: MPRP/19879

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210060900 (Lab ID: 60130769008)
 - Nickel, Dissolved
 - Selenium, Dissolved
- DR3A1210070900 (Lab ID: 60130769016)
 - Arsenic, Dissolved
 - Chromium, Dissolved
 - Copper, Dissolved
 - Nickel, Dissolved
 - Selenium, Dissolved
- DR3A1210080900 (Lab ID: 60130769024)
 - Arsenic, Dissolved
 - Chromium, Dissolved
 - Copper, Dissolved
 - Nickel, Dissolved
 - Selenium, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130769

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: October 22, 2012

General Information:

3 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130769

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: October 22, 2012

General Information:

3 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130769

Sample: DR3A1210060900 Lab ID: 60130769008 Collected: 10/06/12 09:00 Received: 10/09/12 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	222000	ug/L	100	35.8	1	10/09/12 13:35	10/11/12 12:46	7440-70-2	
Iron	4160	ug/L	50.0	17.2	1	10/09/12 13:35	10/11/12 12:46	7439-89-6	
Magnesium	19200	ug/L	50.0	17.2	1	10/09/12 13:35	10/11/12 12:46	7439-95-4	
Potassium	19700	ug/L	500	64.1	1	10/09/12 13:35	10/11/12 12:46	7440-09-7	
Sodium	11000	ug/L	500	40.1	1	10/09/12 13:35	10/11/12 12:46	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	217000	ug/L	100	35.8	1	10/09/12 13:35	10/11/12 13:06	7440-70-2	
Iron, Dissolved	231	ug/L	50.0	17.2	1	10/09/12 13:35	10/11/12 13:06	7439-89-6	
Magnesium, Dissolved	19100	ug/L	50.0	17.2	1	10/09/12 13:35	10/11/12 13:06	7439-95-4	
Potassium, Dissolved	19900	ug/L	500	64.1	1	10/09/12 13:35	10/11/12 13:06	7440-09-7	D9
Sodium, Dissolved	11200	ug/L	500	40.1	1	10/09/12 13:35	10/11/12 13:06	7440-23-5	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	ND	ug/L	10.0	1.4	10	10/09/12 13:35	10/12/12 17:55	7440-38-2	D3
Cadmium	19.8	ug/L	5.0	0.97	10	10/09/12 13:35	10/12/12 15:52	7440-43-9	
Chromium	ND	ug/L	10.0	1.1	10	10/09/12 13:35	10/12/12 15:52	7440-47-3	D3
Cobalt	2.3J	ug/L	10.0	0.48	10	10/09/12 13:35	10/12/12 15:52	7440-48-4	
Copper	44.1	ug/L	10.0	4.5	10	10/09/12 13:35	10/12/12 15:52	7440-50-8	
Lead	2.8J	ug/L	10.0	0.51	10	10/09/12 13:35	10/12/12 15:52	7439-92-1	B
Manganese	1950	ug/L	10.0	2.3	10	10/09/12 13:35	10/12/12 15:52	7439-96-5	
Nickel	ND	ug/L	10.0	3.5	10	10/09/12 13:35	10/12/12 15:52	7440-02-0	D3
Selenium	ND	ug/L	10.0	3.5	10	10/09/12 13:35	10/12/12 15:52	7782-49-2	D3
Zinc	3870	ug/L	100	16.0	10	10/09/12 13:35	10/12/12 17:55	7440-66-6	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	89.2	ug/L	2.5	0.56	5	10/11/12 12:40	10/12/12 20:07	7439-93-2	
Arsenic, Dissolved	ND	ug/L	10.0	1.4	10	10/09/12 13:35	10/12/12 14:44	7440-38-2	D3
Cadmium, Dissolved	18.4	ug/L	5.0	0.97	10	10/09/12 13:35	10/12/12 14:44	7440-43-9	
Chromium, Dissolved	ND	ug/L	10.0	1.1	10	10/09/12 13:35	10/12/12 14:44	7440-47-3	D3
Cobalt, Dissolved	2.5J	ug/L	10.0	0.48	10	10/09/12 13:35	10/12/12 14:44	7440-48-4	
Copper, Dissolved	ND	ug/L	10.0	4.5	10	10/09/12 13:35	10/12/12 14:44	7440-50-8	D3
Lead, Dissolved	1.2J	ug/L	10.0	0.51	10	10/09/12 13:35	10/12/12 14:44	7439-92-1	B
Manganese, Dissolved	1970	ug/L	10.0	2.3	10	10/09/12 13:35	10/12/12 14:44	7439-96-5	D9
Nickel, Dissolved	ND	ug/L	10.0	3.5	10	10/09/12 13:35	10/12/12 14:44	7440-02-0	D3
Selenium, Dissolved	ND	ug/L	10.0	3.5	10	10/09/12 13:35	10/12/12 14:44	7782-49-2	D3
Zinc, Dissolved	3770	ug/L	100	16.0	10	10/09/12 13:35	10/12/12 14:44	7440-66-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	99.4	mg/L	20.0	1.2	1		10/10/12 10:13		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/10/12 10:13		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/10/12 10:13		
Alkalinity, Total as CaCO ₃	99.4	mg/L	20.0	1.2	1		10/10/12 10:13		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130769

Sample: DR3A1210060900		Lab ID: 60130769008		Collected: 10/06/12 09:00		Received: 10/09/12 10:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.078	1		10/10/12 13:23	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		10/10/12 13:23	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/10/12 13:23	16984-48-8	
Sulfate	620	mg/L	100	12.0	100		10/11/12 17:34	14808-79-8	

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130769

Sample: DR3A1210070900 Lab ID: 60130769016 Collected: 10/07/12 09:00 Received: 10/09/12 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	216000	ug/L	100	35.8	1	10/09/12 13:35	10/11/12 12:48	7440-70-2	
Iron	4230	ug/L	50.0	17.2	1	10/09/12 13:35	10/11/12 12:48	7439-89-6	
Magnesium	18900	ug/L	50.0	17.2	1	10/09/12 13:35	10/11/12 12:48	7439-95-4	
Potassium	29100	ug/L	500	64.1	1	10/09/12 13:35	10/11/12 12:48	7440-09-7	
Sodium	10900	ug/L	500	40.1	1	10/09/12 13:35	10/11/12 12:48	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	210000	ug/L	100	35.8	1	10/09/12 13:35	10/11/12 13:08	7440-70-2	
Iron, Dissolved	377	ug/L	50.0	17.2	1	10/09/12 13:35	10/11/12 13:08	7439-89-6	
Magnesium, Dissolved	18800	ug/L	50.0	17.2	1	10/09/12 13:35	10/11/12 13:08	7439-95-4	
Potassium, Dissolved	29800	ug/L	500	64.1	1	10/09/12 13:35	10/11/12 13:08	7440-09-7	D9
Sodium, Dissolved	11200	ug/L	500	40.1	1	10/09/12 13:35	10/11/12 13:08	7440-23-5	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	ND	ug/L	10.0	1.4	10	10/09/12 13:35	10/12/12 17:59	7440-38-2	D3
Cadmium	19.5	ug/L	5.0	0.97	10	10/09/12 13:35	10/12/12 15:56	7440-43-9	
Chromium	ND	ug/L	10.0	1.1	10	10/09/12 13:35	10/12/12 15:56	7440-47-3	D3
Cobalt	2.4J	ug/L	10.0	0.48	10	10/09/12 13:35	10/12/12 15:56	7440-48-4	
Copper	47.8	ug/L	10.0	4.5	10	10/09/12 13:35	10/12/12 15:56	7440-50-8	
Lead	2.8J	ug/L	10.0	0.51	10	10/09/12 13:35	10/12/12 15:56	7439-92-1	B
Manganese	1940	ug/L	10.0	2.3	10	10/09/12 13:35	10/12/12 15:56	7439-96-5	
Nickel	ND	ug/L	10.0	3.5	10	10/09/12 13:35	10/12/12 15:56	7440-02-0	D3
Selenium	ND	ug/L	10.0	3.5	10	10/09/12 13:35	10/12/12 15:56	7782-49-2	D3
Zinc	3570	ug/L	100	16.0	10	10/09/12 13:35	10/12/12 17:59	7440-66-6	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	129	ug/L	2.5	0.56	5	10/11/12 12:40	10/12/12 20:12	7439-93-2	
Arsenic, Dissolved	ND	ug/L	10.0	1.4	10	10/09/12 13:35	10/12/12 14:48	7440-38-2	D3
Cadmium, Dissolved	18.2	ug/L	5.0	0.97	10	10/09/12 13:35	10/12/12 14:48	7440-43-9	
Chromium, Dissolved	ND	ug/L	10.0	1.1	10	10/09/12 13:35	10/12/12 14:48	7440-47-3	D3
Cobalt, Dissolved	2.4J	ug/L	10.0	0.48	10	10/09/12 13:35	10/12/12 14:48	7440-48-4	
Copper, Dissolved	ND	ug/L	10.0	4.5	10	10/09/12 13:35	10/12/12 14:48	7440-50-8	D3
Lead, Dissolved	1.1J	ug/L	10.0	0.51	10	10/09/12 13:35	10/12/12 14:48	7439-92-1	B
Manganese, Dissolved	1920	ug/L	10.0	2.3	10	10/09/12 13:35	10/12/12 14:48	7439-96-5	D9
Nickel, Dissolved	ND	ug/L	10.0	3.5	10	10/09/12 13:35	10/12/12 14:48	7440-02-0	D3
Selenium, Dissolved	ND	ug/L	10.0	3.5	10	10/09/12 13:35	10/12/12 14:48	7782-49-2	D3
Zinc, Dissolved	3620	ug/L	100	16.0	10	10/09/12 13:35	10/12/12 14:48	7440-66-6	D9
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	104	mg/L	20.0	1.2	1		10/10/12 10:18		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/10/12 10:18		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/10/12 10:18		
Alkalinity, Total as CaCO ₃	104	mg/L	20.0	1.2	1		10/10/12 10:18		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130769

Sample: DR3A1210070900		Lab ID: 60130769016		Collected: 10/07/12 09:00		Received: 10/09/12 10:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.078	1		10/10/12 13:54	24959-67-9	
Chloride	0.61J	mg/L	1.0	0.50	1		10/10/12 13:54	16887-00-6	
Fluoride	2.3	mg/L	0.20	0.011	1		10/10/12 13:54	16984-48-8	
Sulfate	620	mg/L	100	12.0	100		10/11/12 17:53	14808-79-8	

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130769

Sample: DR3A1210080900 Lab ID: 60130769024 Collected: 10/08/12 09:00 Received: 10/09/12 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	209000	ug/L	100	35.8	1	10/09/12 13:35	10/11/12 12:50	7440-70-2	
Iron	3750	ug/L	50.0	17.2	1	10/09/12 13:35	10/11/12 12:50	7439-89-6	
Magnesium	18700	ug/L	50.0	17.2	1	10/09/12 13:35	10/11/12 12:50	7439-95-4	
Potassium	52300	ug/L	500	64.1	1	10/09/12 13:35	10/11/12 12:50	7440-09-7	
Sodium	11000	ug/L	500	40.1	1	10/09/12 13:35	10/11/12 12:50	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	203000	ug/L	100	35.8	1	10/09/12 13:35	10/11/12 13:10	7440-70-2	
Iron, Dissolved	152	ug/L	50.0	17.2	1	10/09/12 13:35	10/11/12 13:10	7439-89-6	
Magnesium, Dissolved	18800	ug/L	50.0	17.2	1	10/09/12 13:35	10/11/12 13:10	7439-95-4	D9
Potassium, Dissolved	53700	ug/L	500	64.1	1	10/09/12 13:35	10/11/12 13:10	7440-09-7	D9
Sodium, Dissolved	11400	ug/L	500	40.1	1	10/09/12 13:35	10/11/12 13:10	7440-23-5	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	ND	ug/L	10.0	1.4	10	10/09/12 13:35	10/12/12 18:03	7440-38-2	D3
Cadmium	17.8	ug/L	5.0	0.97	10	10/09/12 13:35	10/12/12 16:00	7440-43-9	
Chromium	ND	ug/L	10.0	1.1	10	10/09/12 13:35	10/12/12 16:00	7440-47-3	D3
Cobalt	2.4J	ug/L	10.0	0.48	10	10/09/12 13:35	10/12/12 16:00	7440-48-4	
Copper	42.9	ug/L	10.0	4.5	10	10/09/12 13:35	10/12/12 16:00	7440-50-8	
Lead	2.6J	ug/L	10.0	0.51	10	10/09/12 13:35	10/12/12 16:00	7439-92-1	B
Manganese	1920	ug/L	10.0	2.3	10	10/09/12 13:35	10/12/12 16:00	7439-96-5	M6
Nickel	ND	ug/L	10.0	3.5	10	10/09/12 13:35	10/12/12 16:00	7440-02-0	D3
Selenium	ND	ug/L	10.0	3.5	10	10/09/12 13:35	10/12/12 16:00	7782-49-2	D3
Zinc	3210	ug/L	100	16.0	10	10/09/12 13:35	10/12/12 18:03	7440-66-6	M6
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	215	ug/L	2.5	0.56	5	10/11/12 12:40	10/12/12 20:18	7439-93-2	
Arsenic, Dissolved	ND	ug/L	10.0	1.4	10	10/09/12 13:35	10/12/12 14:52	7440-38-2	D3
Cadmium, Dissolved	16.0	ug/L	5.0	0.97	10	10/09/12 13:35	10/12/12 14:52	7440-43-9	
Chromium, Dissolved	ND	ug/L	10.0	1.1	10	10/09/12 13:35	10/12/12 14:52	7440-47-3	D3
Cobalt, Dissolved	2.2J	ug/L	10.0	0.48	10	10/09/12 13:35	10/12/12 14:52	7440-48-4	
Copper, Dissolved	ND	ug/L	10.0	4.5	10	10/09/12 13:35	10/12/12 14:52	7440-50-8	D3
Lead, Dissolved	1.1J	ug/L	10.0	0.51	10	10/09/12 13:35	10/12/12 14:52	7439-92-1	B
Manganese, Dissolved	1840	ug/L	10.0	2.3	10	10/09/12 13:35	10/12/12 14:52	7439-96-5	M6
Nickel, Dissolved	ND	ug/L	10.0	3.5	10	10/09/12 13:35	10/12/12 14:52	7440-02-0	D3
Selenium, Dissolved	ND	ug/L	10.0	3.5	10	10/09/12 13:35	10/12/12 14:52	7782-49-2	D3
Zinc, Dissolved	3230	ug/L	100	16.0	10	10/09/12 13:35	10/12/12 14:52	7440-66-6	D9,M6
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	110	mg/L	20.0	1.2	1		10/10/12 10:22		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/10/12 10:22		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/10/12 10:22		
Alkalinity, Total as CaCO3	110	mg/L	20.0	1.2	1		10/10/12 10:22		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130769

Sample: DR3A1210080900		Lab ID: 60130769024		Collected: 10/08/12 09:00		Received: 10/09/12 10:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.078	1		10/10/12 14:25	24959-67-9	
Chloride	1.1	mg/L	1.0	0.50	1		10/10/12 14:25	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/10/12 14:25	16984-48-8	
Sulfate	617	mg/L	100	12.0	100		10/11/12 18:12	14808-79-8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130769

QC Batch: ICPM/35658 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60130769008, 60130769016, 60130769024

METHOD BLANK: 1307209 Matrix: Water

Associated Lab Samples: 60130769008, 60130769016, 60130769024

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lithium, Dissolved	ug/L	ND	0.50	10/12/12 18:23	

LABORATORY CONTROL SAMPLE: 1307210

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lithium, Dissolved	ug/L	80	84.7	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1307211 1307212

Parameter	Units	60130685003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lithium, Dissolved	ug/L	74.7	80	80	160	160	107	107	70-130	.09	20	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130769

QC Batch: MPRP/19883 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60130769008, 60130769016, 60130769024

METHOD BLANK: 1076169 Matrix: Water

Associated Lab Samples: 60130769008, 60130769016, 60130769024

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	ug/L	ND	100	10/11/12 12:42	
Iron	ug/L	ND	50.0	10/11/12 12:42	
Magnesium	ug/L	ND	50.0	10/11/12 12:42	
Potassium	ug/L	ND	500	10/11/12 12:42	
Sodium	ug/L	ND	500	10/11/12 12:42	

LABORATORY CONTROL SAMPLE: 1076170

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	9370	94	85-115	
Iron	ug/L	10000	9480	95	85-115	
Magnesium	ug/L	10000	9700	97	85-115	
Potassium	ug/L	10000	9830	98	85-115	
Sodium	ug/L	10000	9950	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1076171 1076172

Parameter	Units	60130769024 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	209000	10000	10000	220000	216000	112	76	70-130	2	9	
Iron	ug/L	3750	10000	10000	13200	13200	94	94	70-130	0	10	
Magnesium	ug/L	18700	10000	10000	28500	28100	98	94	70-130	1	9	
Potassium	ug/L	52300	10000	10000	63200	62400	109	100	70-130	1	7	
Sodium	ug/L	11000	10000	10000	21400	21300	104	103	70-130	1	8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130769

QC Batch:	MPRP/19881	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Dissolved
Associated Lab Samples:	60130769008, 60130769016, 60130769024		

METHOD BLANK: 1076161 Matrix: Water

Associated Lab Samples: 60130769008, 60130769016, 60130769024

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	10/11/12 13:00	
Iron, Dissolved	ug/L	ND	50.0	10/11/12 13:00	
Magnesium, Dissolved	ug/L	ND	50.0	10/11/12 13:00	
Potassium, Dissolved	ug/L	ND	500	10/11/12 13:00	
Sodium, Dissolved	ug/L	ND	500	10/11/12 13:00	

LABORATORY CONTROL SAMPLE: 1076162

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9400	94	85-115	
Iron, Dissolved	ug/L	10000	9500	95	85-115	
Magnesium, Dissolved	ug/L	10000	9710	97	85-115	
Potassium, Dissolved	ug/L	10000	9860	99	85-115	
Sodium, Dissolved	ug/L	10000	10000	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1076163 1076164

Parameter	Units	60130769024		MS		MSD		MS		MSD		% Rec		Max	
		Result	Conc.	Spike Conc.	Conc.	Result	Conc.	% Rec	% Rec	% Rec	% Rec	Limits	RPD	RPD	Qual
Calcium, Dissolved	ug/L	203000	10000	10000	10000	211000	211000	78	74	70-130	0	9			
Iron, Dissolved	ug/L	152	10000	10000	10000	9270	9340	91	92	70-130	1	10			
Magnesium, Dissolved	ug/L	18800	10000	10000	10000	28000	28200	93	94	70-130	0	9			
Potassium, Dissolved	ug/L	53700	10000	10000	10000	64400	64600	106	108	70-130	0	7			
Sodium, Dissolved	ug/L	11400	10000	10000	10000	21900	22100	106	107	70-130	1	8			

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130769

QC Batch: MPRP/19880 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60130769008, 60130769016, 60130769024

METHOD BLANK: 1076156 Matrix: Water

Associated Lab Samples: 60130769008, 60130769016, 60130769024

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	10/12/12 17:46	
Cadmium	ug/L	ND	0.50	10/12/12 15:43	
Chromium	ug/L	ND	1.0	10/12/12 15:43	
Cobalt	ug/L	ND	1.0	10/12/12 15:43	
Copper	ug/L	ND	1.0	10/12/12 15:43	
Lead	ug/L	0.11J	1.0	10/12/12 15:43	
Manganese	ug/L	ND	1.0	10/12/12 15:43	
Nickel	ug/L	ND	1.0	10/12/12 15:43	
Selenium	ug/L	ND	1.0	10/12/12 15:43	
Zinc	ug/L	ND	10.0	10/12/12 17:46	

LABORATORY CONTROL SAMPLE: 1076157

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	41.2	103	85-115	
Cadmium	ug/L	40	41.3	103	85-115	
Chromium	ug/L	40	42.6	106	85-115	
Cobalt	ug/L	40	41.5	104	85-115	
Copper	ug/L	40	42.3	106	85-115	
Lead	ug/L	40	40.8	102	85-115	
Manganese	ug/L	40	41.8	104	85-115	
Nickel	ug/L	40	42.0	105	85-115	
Selenium	ug/L	40	39.8	99	85-115	
Zinc	ug/L	100	108	108	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1076158 1076159

Parameter	Units	60130769024 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	ND	40	40	45.3	41.6	112	103	70-130	8	20	
Cadmium	ug/L	17.8	40	40	59.1	59.7	103	105	70-130	1	20	
Chromium	ug/L	ND	40	40	43.2	44.2	106	108	70-130	2	20	
Cobalt	ug/L	2.4J	40	40	43.0	45.0	101	106	70-130	5	20	
Copper	ug/L	42.9	40	40	83.2	87.8	101	112	70-130	5	20	
Lead	ug/L	2.6J	40	40	42.3	44.2	99	104	70-130	5	20	
Manganese	ug/L	1920	40	40	1950	1990	58	162	70-130	2	20 M6	
Nickel	ug/L	ND	40	40	43.9	46.5	105	112	70-130	6	20	
Selenium	ug/L	ND	40	40	36.4	36.2	91	91	70-130	1	20	
Zinc	ug/L	3210	100	100	3710	3440	497	232	70-130	7	20 M6	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130769

QC Batch: MPRP/19879 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60130769008, 60130769016, 60130769024

METHOD BLANK: 1076152 Matrix: Water

Associated Lab Samples: 60130769008, 60130769016, 60130769024

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	10/12/12 14:36	
Cadmium, Dissolved	ug/L	ND	0.50	10/12/12 14:36	
Chromium, Dissolved	ug/L	ND	1.0	10/12/12 14:36	
Cobalt, Dissolved	ug/L	ND	1.0	10/12/12 14:36	
Copper, Dissolved	ug/L	ND	1.0	10/12/12 14:36	
Lead, Dissolved	ug/L	0.11J	1.0	10/12/12 14:36	
Manganese, Dissolved	ug/L	ND	1.0	10/12/12 14:36	
Nickel, Dissolved	ug/L	ND	1.0	10/12/12 14:36	
Selenium, Dissolved	ug/L	ND	1.0	10/12/12 14:36	
Zinc, Dissolved	ug/L	ND	10.0	10/12/12 14:36	

LABORATORY CONTROL SAMPLE: 1076153

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	42.6	106	85-115	
Cadmium, Dissolved	ug/L	40	40.7	102	85-115	
Chromium, Dissolved	ug/L	40	41.8	105	85-115	
Cobalt, Dissolved	ug/L	40	40.8	102	85-115	
Copper, Dissolved	ug/L	40	41.2	103	85-115	
Lead, Dissolved	ug/L	40	40.2	100	85-115	
Manganese, Dissolved	ug/L	40	41.2	103	85-115	
Nickel, Dissolved	ug/L	40	41.2	103	85-115	
Selenium, Dissolved	ug/L	40	40.6	101	85-115	
Zinc, Dissolved	ug/L	100	109	109	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1076154 1076155

Parameter	Units	60130769024 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	ND	40	40	40.8	43.9	102	110	70-130	7	20	
Cadmium, Dissolved	ug/L	16.0	40	40	57.4	59.5	104	109	70-130	4	20	
Chromium, Dissolved	ug/L	ND	40	40	41.3	43.7	103	109	70-130	6	20	
Cobalt, Dissolved	ug/L	2.2J	40	40	42.9	44.2	102	105	70-130	3	20	
Copper, Dissolved	ug/L	ND	40	40	43.6	44.6	103	106	70-130	2	20	
Lead, Dissolved	ug/L	1.1J	40	40	40.1	42.3	98	103	70-130	5	20	
Manganese, Dissolved	ug/L	1840	40	40	1890	2010	130	430	70-130	6	20 M6	
Nickel, Dissolved	ug/L	ND	40	40	39.5	44.8	96	109	70-130	13	20	
Selenium, Dissolved	ug/L	ND	40	40	36.5	41.0	91	102	70-130	11	20	
Zinc, Dissolved	ug/L	3230	100	100	3350	3540	117	308	70-130	6	20 M6	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130769

QC Batch: WET/37584 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60130769008, 60130769016, 60130769024

METHOD BLANK: 1076387 Matrix: Water

Associated Lab Samples: 60130769008, 60130769016, 60130769024

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	10/10/12 08:47	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	10/10/12 08:47	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	10/10/12 08:47	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	10/10/12 08:47	

LABORATORY CONTROL SAMPLE: 1076388

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	482	96	90-110	

SAMPLE DUPLICATE: 1076389

Parameter	Units	60130401001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	658	676	3	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	658	676	3	9	

SAMPLE DUPLICATE: 1076390

Parameter	Units	60130769024 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	110	109	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	110	109	1	9	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130769

QC Batch: WETA/21973 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60130769008, 60130769016, 60130769024

METHOD BLANK: 1076419 Matrix: Water

Associated Lab Samples: 60130769008, 60130769016, 60130769024

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	10/10/12 11:01	
Chloride	mg/L	ND	1.0	10/10/12 11:01	
Fluoride	mg/L	ND	0.20	10/10/12 11:01	

METHOD BLANK: 1077274 Matrix: Water

Associated Lab Samples: 60130769008, 60130769016, 60130769024

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	10/11/12 16:20	
Chloride	mg/L	ND	1.0	10/11/12 16:20	
Fluoride	mg/L	ND	0.20	10/11/12 16:20	

LABORATORY CONTROL SAMPLE: 1076420

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.8	96	90-110	
Chloride	mg/L	5	4.5	90	90-110	
Fluoride	mg/L	2.5	2.4	96	90-110	

LABORATORY CONTROL SAMPLE: 1077275

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.0	100	90-110	
Chloride	mg/L	5	4.9	98	90-110	
Fluoride	mg/L	2.5	2.4	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1076421 1076422

Parameter	Units	60130769024 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	ND	5	5	5.1	5.2	101	104	75-119	3	10	
Chloride	mg/L	1.1	5	5	6.1	6.1	100	101	64-118	1	12	
Fluoride	mg/L	2.2	2.5	2.5	4.7	4.8	100	102	75-110	1	10	

QUALIFIERS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130769

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

PASI-M Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130769

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60130769008	DR3A1210060900	EPA 200.7	MPRP/19883	EPA 200.7	ICP/16343
60130769016	DR3A1210070900	EPA 200.7	MPRP/19883	EPA 200.7	ICP/16343
60130769024	DR3A1210080900	EPA 200.7	MPRP/19883	EPA 200.7	ICP/16343
60130769008	DR3A1210060900	EPA 200.7	MPRP/19881	EPA 200.7	ICP/16342
60130769016	DR3A1210070900	EPA 200.7	MPRP/19881	EPA 200.7	ICP/16342
60130769024	DR3A1210080900	EPA 200.7	MPRP/19881	EPA 200.7	ICP/16342
60130769008	DR3A1210060900	EPA 200.8	MPRP/19880	EPA 200.8	ICPM/1704
60130769016	DR3A1210070900	EPA 200.8	MPRP/19880	EPA 200.8	ICPM/1704
60130769024	DR3A1210080900	EPA 200.8	MPRP/19880	EPA 200.8	ICPM/1704
60130769008	DR3A1210060900	EPA 200.8	ICPM/35658	EPA 200.8	ICPM/14075
60130769008	DR3A1210060900	EPA 200.8	MPRP/19879	EPA 200.8	ICPM/1705
60130769016	DR3A1210070900	EPA 200.8	ICPM/35658	EPA 200.8	ICPM/14075
60130769016	DR3A1210070900	EPA 200.8	MPRP/19879	EPA 200.8	ICPM/1705
60130769024	DR3A1210080900	EPA 200.8	ICPM/35658	EPA 200.8	ICPM/14075
60130769024	DR3A1210080900	EPA 200.8	MPRP/19879	EPA 200.8	ICPM/1705
60130769008	DR3A1210060900	SM 2320B	WET/37584		
60130769016	DR3A1210070900	SM 2320B	WET/37584		
60130769024	DR3A1210080900	SM 2320B	WET/37584		
60130769008	DR3A1210060900	EPA 300.0	WETA/21973		
60130769016	DR3A1210070900	EPA 300.0	WETA/21973		
60130769024	DR3A1210080900	EPA 300.0	WETA/21973		

October 22, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: Rico-Argentine Mine Site
Pace Project No.: 60130843

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on October 10, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Rico-Argentine Mine Site

Pace Project No.: 60130843

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414

A2LA Certification #: 2926.01

Alaska Certification #: UST-078

Alaska Certification #MN00064

Arizona Certification #: AZ-0014

Arkansas Certification #: 88-0680

California Certification #: 01155CA

Colorado Certification #Pace

Connecticut Certification #: PH-0256

EPA Region 8 Certification #: Pace

Florida/NELAP Certification #: E87605

Georgia Certification #: 959

Hawaii Certification #Pace

Idaho Certification #: MN00064

Illinois Certification #: 200011

Kansas Certification #: E-10167

Louisiana Certification #: 03086

Louisiana Certification #: LA080009

Maine Certification #: 2007029

Maryland Certification #: 322

Michigan DEQ Certification #: 9909

Minnesota Certification #: 027-053-137

Mississippi Certification #: Pace

Montana Certification #: MT CERT0092

Nevada Certification #: MN_00064

Nebraska Certification #: Pace

New Jersey Certification #: MN-002

New York Certification #: 11647

North Carolina Certification #: 530

North Dakota Certification #: R-036

North Dakota Certification #: R-036A

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Certification #: MN200001

Oregon Certification #: MN300001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification

Tennessee Certification #: 02818

Texas Certification #: T104704192

Utah Certification #: MN00064

Virginia/DCLS Certification #: 002521

Virginia/VELAP Certification #: 460163

Washington Certification #: C754

West Virginia Certification #: 382

Wisconsin Certification #: 999407970

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Rico-Argentine Mine Site

Pace Project No.: 60130843

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60130843008	DR3A1210090900	Water	10/09/12 09:00	10/10/12 10:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Rico-Argentine Mine Site

Pace Project No.: 60130843

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60130843008	DR3A1210090900	EPA 200.7	JGP	5	PASI-K
		EPA 200.7	JGP	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	AS2	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60130843

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: October 22, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19903

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60130638001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1076859)
- Sodium

Additional Comments:

Analyte Comments:

QC Batch: MPRP/19903

B: Analyte was detected in the associated method blank.

- DR3A1210090900 (Lab ID: 60130843008)
- Sodium

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60130843

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: October 22, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19904

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60130843008

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1076877)
 - Calcium, Dissolved
 - Potassium, Dissolved
- MSD (Lab ID: 1076878)
 - Calcium, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60130843

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: October 22, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/19905

B: Analyte was detected in the associated method blank.

- DR3A1210090900 (Lab ID: 60130843008)
 - Lead

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210090900 (Lab ID: 60130843008)
 - Arsenic
 - Chromium
 - Nickel
 - Selenium

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60130843

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: October 22, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/19901

B: Analyte was detected in the associated method blank.

- DR3A1210090900 (Lab ID: 60130843008)
 - Lead, Dissolved

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210090900 (Lab ID: 60130843008)
 - Arsenic, Dissolved
 - Copper, Dissolved
 - Nickel, Dissolved
 - Selenium, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60130843

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: October 22, 2012

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60130843

Method: EPA 300.0
Description: 300.0 IC Anions 28 Days
Client: BP AMEC
Date: October 22, 2012

General Information:

1 sample was analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: WETA/21998

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60129926001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1077291)
- Bromide

Additional Comments:

Analyte Comments:

QC Batch: WETA/21998

B: Analyte was detected in the associated method blank.

- DR3A1210090900 (Lab ID: 60130843008)
- Bromide

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60130843

Sample: DR3A1210090900 Lab ID: 60130843008 Collected: 10/09/12 09:00 Received: 10/10/12 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	194000	ug/L	100	35.8	1	10/10/12 16:15	10/11/12 16:54	7440-70-2	
Iron	3490	ug/L	50.0	17.2	1	10/10/12 16:15	10/11/12 16:54	7439-89-6	
Magnesium	18500	ug/L	50.0	17.2	1	10/10/12 16:15	10/11/12 16:54	7439-95-4	
Potassium	75000	ug/L	500	64.1	1	10/10/12 16:15	10/11/12 16:54	7440-09-7	
Sodium	11400	ug/L	500	40.1	1	10/10/12 16:15	10/11/12 16:54	7440-23-5	B
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	198000	ug/L	100	35.8	1	10/10/12 16:15	10/11/12 16:42	7440-70-2	D9,M1
Iron, Dissolved	138	ug/L	50.0	17.2	1	10/10/12 16:15	10/11/12 16:42	7439-89-6	
Magnesium, Dissolved	18700	ug/L	50.0	17.2	1	10/10/12 16:15	10/11/12 16:42	7439-95-4	D9
Potassium, Dissolved	76400	ug/L	500	64.1	1	10/10/12 16:15	10/11/12 16:42	7440-09-7	D9,M1
Sodium, Dissolved	11700	ug/L	500	40.1	1	10/10/12 16:15	10/11/12 16:42	7440-23-5	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	ND	ug/L	10.0	1.4	10	10/10/12 16:25	10/12/12 19:12	7440-38-2	D3
Cadmium	15.4	ug/L	5.0	0.97	10	10/10/12 16:25	10/12/12 19:12	7440-43-9	
Chromium	ND	ug/L	10.0	1.1	10	10/10/12 16:25	10/12/12 19:12	7440-47-3	D3
Cobalt	2.6J	ug/L	10.0	0.48	10	10/10/12 16:25	10/12/12 19:12	7440-48-4	
Copper	38.8	ug/L	10.0	4.5	10	10/10/12 16:25	10/12/12 19:12	7440-50-8	
Lead	2.9J	ug/L	10.0	0.51	10	10/10/12 16:25	10/12/12 19:12	7439-92-1	B
Manganese	1790	ug/L	10.0	2.3	10	10/10/12 16:25	10/12/12 19:12	7439-96-5	
Nickel	ND	ug/L	10.0	3.5	10	10/10/12 16:25	10/12/12 19:12	7440-02-0	D3
Selenium	ND	ug/L	10.0	3.5	10	10/10/12 16:25	10/12/12 19:12	7782-49-2	D3
Zinc	3040	ug/L	100	16.0	10	10/10/12 16:25	10/12/12 19:12	7440-66-6	M6
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	287	ug/L	2.5	0.56	5	10/12/12 18:38	10/14/12 11:09	7439-93-2	
Arsenic, Dissolved	ND	ug/L	10.0	1.4	10	10/10/12 16:25	10/12/12 18:56	7440-38-2	D3
Cadmium, Dissolved	14.8	ug/L	5.0	0.97	10	10/10/12 16:25	10/12/12 18:56	7440-43-9	
Chromium, Dissolved	1.1J	ug/L	10.0	1.1	10	10/10/12 16:25	10/12/12 18:56	7440-47-3	
Cobalt, Dissolved	2.6J	ug/L	10.0	0.48	10	10/10/12 16:25	10/12/12 18:56	7440-48-4	
Copper, Dissolved	ND	ug/L	10.0	4.5	10	10/10/12 16:25	10/12/12 18:56	7440-50-8	D3
Lead, Dissolved	1.6J	ug/L	10.0	0.51	10	10/10/12 16:25	10/12/12 18:56	7439-92-1	B
Manganese, Dissolved	1770	ug/L	10.0	2.3	10	10/10/12 16:25	10/12/12 18:56	7439-96-5	M6
Nickel, Dissolved	ND	ug/L	10.0	3.5	10	10/10/12 16:25	10/12/12 18:56	7440-02-0	D3
Selenium, Dissolved	ND	ug/L	10.0	3.5	10	10/10/12 16:25	10/12/12 18:56	7782-49-2	D3
Zinc, Dissolved	2890	ug/L	100	16.0	10	10/10/12 16:25	10/12/12 18:56	7440-66-6	M6
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	114	mg/L	20.0	1.2	1		10/11/12 10:04		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/11/12 10:04		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/11/12 10:04		
Alkalinity, Total as CaCO3	114	mg/L	20.0	1.2	1		10/11/12 10:04		

ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60130843

Sample: DR3A1210090900		Lab ID: 60130843008		Collected: 10/09/12 09:00		Received: 10/10/12 10:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.19J	mg/L	1.0	0.059	1		10/12/12 13:22	24959-67-9	B
Chloride	2.0	mg/L	1.0	0.50	1		10/12/12 13:22	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.027	1		10/12/12 13:22	16984-48-8	
Sulfate	610	mg/L	100	34.0	100		10/12/12 13:39	14808-79-8	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60130843

QC Batch: ICPM/35690

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60130843008

METHOD BLANK: 1308443

Matrix: Water

Associated Lab Samples: 60130843008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lithium, Dissolved	ug/L	ND	0.50	10/13/12 18:21	

LABORATORY CONTROL SAMPLE: 1308444

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lithium, Dissolved	ug/L	80	81.0	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1308445 1308446

Parameter	Units	60130556007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lithium, Dissolved	ug/L	77.2	80	80	161	157	105	99	70-130	3	20	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60130843

QC Batch: MPRP/19903 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60130843008

METHOD BLANK: 1076857 Matrix: Water
Associated Lab Samples: 60130843008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	ug/L	ND	100	10/11/12 16:52	
Iron	ug/L	ND	50.0	10/11/12 16:52	
Magnesium	ug/L	ND	50.0	10/11/12 13:58	
Potassium	ug/L	ND	500	10/11/12 13:58	
Sodium	ug/L	179J	500	10/11/12 13:58	

LABORATORY CONTROL SAMPLE: 1076858

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	9180	92	85-115	
Iron	ug/L	10000	9260	93	85-115	
Magnesium	ug/L	10000	9100	91	85-115	
Potassium	ug/L	10000	9580	96	85-115	
Sodium	ug/L	10000	9970	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1076859 1076860

Parameter	Units	60130638001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	37400	10000	10000	45400	45400	80	80	70-130	0	9	
Iron	ug/L	786	10000	10000	9940	9930	92	91	70-130	0	10	
Magnesium	ug/L	3000	10000	10000	12300	12300	93	93	70-130	0	9	
Potassium	ug/L	11100	10000	10000	21300	21300	101	101	70-130	0	7	
Sodium	ug/L	213000	10000	10000	218000	221000	50	74	70-130	1	8 M1	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60130843

QC Batch: MPRP/19904

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60130843008

METHOD BLANK: 1076875

Matrix: Water

Associated Lab Samples: 60130843008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	10/11/12 16:38	
Iron, Dissolved	ug/L	ND	50.0	10/11/12 16:38	
Magnesium, Dissolved	ug/L	ND	50.0	10/11/12 16:38	
Potassium, Dissolved	ug/L	ND	500	10/11/12 16:38	
Sodium, Dissolved	ug/L	ND	500	10/11/12 16:38	

LABORATORY CONTROL SAMPLE: 1076876

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9060	91	85-115	
Iron, Dissolved	ug/L	10000	9280	93	85-115	
Magnesium, Dissolved	ug/L	10000	9770	98	85-115	
Potassium, Dissolved	ug/L	10000	10200	102	85-115	
Sodium, Dissolved	ug/L	10000	10300	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1076877

1076878

Parameter	Units	60130843008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium, Dissolved	ug/L	198000	10000	10000	194000	198000	-46	0	70-130	2	9	M1
Iron, Dissolved	ug/L	138	10000	10000	8960	9140	88	90	70-130	2	10	
Magnesium, Dissolved	ug/L	18700	10000	10000	26600	27000	79	82	70-130	1	9	
Potassium, Dissolved	ug/L	76400	10000	10000	82600	84100	62	76	70-130	2	7	M1
Sodium, Dissolved	ug/L	11700	10000	10000	21500	21800	97	100	70-130	1	8	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60130843

QC Batch: MPRP/19905 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60130843008

METHOD BLANK: 1076881 Matrix: Water
Associated Lab Samples: 60130843008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	10/12/12 18:48	
Cadmium	ug/L	ND	0.50	10/12/12 18:48	
Chromium	ug/L	ND	1.0	10/12/12 18:48	
Cobalt	ug/L	ND	1.0	10/12/12 18:48	
Copper	ug/L	ND	1.0	10/12/12 18:48	
Lead	ug/L	0.18J	1.0	10/12/12 18:48	
Manganese	ug/L	ND	1.0	10/12/12 18:48	
Nickel	ug/L	ND	1.0	10/12/12 18:48	
Selenium	ug/L	ND	1.0	10/12/12 18:48	
Zinc	ug/L	ND	10.0	10/12/12 18:48	

LABORATORY CONTROL SAMPLE: 1076882

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	43.3	108	85-115	
Cadmium	ug/L	40	42.9	107	85-115	
Chromium	ug/L	40	42.6	107	85-115	
Cobalt	ug/L	40	42.2	106	85-115	
Copper	ug/L	40	42.7	107	85-115	
Lead	ug/L	40	42.1	105	85-115	
Manganese	ug/L	40	43.0	108	85-115	
Nickel	ug/L	40	42.7	107	85-115	
Selenium	ug/L	40	43.2	108	85-115	
Zinc	ug/L	100	112	112	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1076883 1076884

Parameter	Units	60130843008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	ND	40	40	40.7	43.8	100	108	70-130	7	20	
Cadmium	ug/L	15.4	40	40	53.5	55.8	95	101	70-130	4	20	
Chromium	ug/L	ND	40	40	41.8	41.6	102	101	70-130	0	20	
Cobalt	ug/L	2.6J	40	40	42.2	42.6	99	100	70-130	1	20	
Copper	ug/L	38.8	40	40	76.9	77.5	95	97	70-130	1	20	
Lead	ug/L	2.9J	40	40	41.1	42.3	96	99	70-130	3	20	
Manganese	ug/L	1790	40	40	1840	1830	122	102	70-130	0	20	
Nickel	ug/L	ND	40	40	41.8	44.2	98	104	70-130	6	20	
Selenium	ug/L	ND	40	40	37.6	40.6	94	102	70-130	8	20	
Zinc	ug/L	3040	100	100	3190	3180	146	133	70-130	0	20 M6	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60130843

QC Batch: MPRP/19901 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60130843008

METHOD BLANK: 1076840 Matrix: Water
Associated Lab Samples: 60130843008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	10/12/12 18:48	
Cadmium, Dissolved	ug/L	ND	0.50	10/12/12 18:48	
Chromium, Dissolved	ug/L	ND	1.0	10/12/12 18:48	
Cobalt, Dissolved	ug/L	ND	1.0	10/12/12 18:48	
Copper, Dissolved	ug/L	ND	1.0	10/12/12 18:48	
Lead, Dissolved	ug/L	0.18J	1.0	10/12/12 18:48	
Manganese, Dissolved	ug/L	ND	1.0	10/12/12 18:48	
Nickel, Dissolved	ug/L	ND	1.0	10/12/12 18:48	
Selenium, Dissolved	ug/L	ND	1.0	10/12/12 18:48	
Zinc, Dissolved	ug/L	ND	10.0	10/12/12 18:48	

LABORATORY CONTROL SAMPLE: 1076841

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	43.3	108	85-115	
Cadmium, Dissolved	ug/L	40	42.9	107	85-115	
Chromium, Dissolved	ug/L	40	42.6	107	85-115	
Cobalt, Dissolved	ug/L	40	42.2	106	85-115	
Copper, Dissolved	ug/L	40	42.7	107	85-115	
Lead, Dissolved	ug/L	40	42.1	105	85-115	
Manganese, Dissolved	ug/L	40	43.0	108	85-115	
Nickel, Dissolved	ug/L	40	42.7	107	85-115	
Selenium, Dissolved	ug/L	40	43.2	108	85-115	
Zinc, Dissolved	ug/L	100	112	112	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1076842 1076843

Parameter	Units	60130843008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	ND	40	40	41.4	40.5	102	100	70-130	2	20	
Cadmium, Dissolved	ug/L	14.8	40	40	55.3	53.9	101	98	70-130	2	20	
Chromium, Dissolved	ug/L	1.1J	40	40	39.8	40.3	97	98	70-130	1	20	
Cobalt, Dissolved	ug/L	2.6J	40	40	41.8	40.8	98	95	70-130	2	20	
Copper, Dissolved	ug/L	ND	40	40	43.6	43.0	100	98	70-130	1	20	
Lead, Dissolved	ug/L	1.6J	40	40	39.4	39.3	95	94	70-130	0	20	
Manganese, Dissolved	ug/L	1770	40	40	1850	1760	218	-15	70-130	5	20 M6	
Nickel, Dissolved	ug/L	ND	40	40	41.4	41.8	98	99	70-130	1	20	
Selenium, Dissolved	ug/L	ND	40	40	39.2	40.9	97	102	70-130	4	20	
Zinc, Dissolved	ug/L	2890	100	100	3070	2890	181	1	70-130	6	20 M6	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60130843

QC Batch: WET/37614

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60130843008

METHOD BLANK: 1077184

Matrix: Water

Associated Lab Samples: 60130843008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	10/11/12 08:23	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	10/11/12 08:23	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	10/11/12 08:23	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	10/11/12 08:23	

LABORATORY CONTROL SAMPLE: 1077185

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	472	94	90-110	

SAMPLE DUPLICATE: 1077186

Parameter	Units	60130294003 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	347	348	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	347	348	1	9	

SAMPLE DUPLICATE: 1077187

Parameter	Units	60130543002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	433	431	0	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	433	431	0	9	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60130843

QC Batch: WETA/21998

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60130843008

METHOD BLANK: 1077288

Matrix: Water

Associated Lab Samples: 60130843008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	0.12J	1.0	10/12/12 10:28	
Chloride	mg/L	ND	1.0	10/12/12 10:28	
Fluoride	mg/L	ND	0.20	10/12/12 10:28	
Sulfate	mg/L	ND	1.0	10/12/12 10:28	

LABORATORY CONTROL SAMPLE: 1077289

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.8	96	90-110	
Chloride	mg/L	5	4.8	97	90-110	
Fluoride	mg/L	2.5	2.4	97	90-110	
Sulfate	mg/L	5	5.1	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1077290

1077291

Parameter	Units	60129926001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	2.1	5	5	6.1	5.8	80	74	75-119	5	10	M1
Chloride	mg/L	163	100	100	247	252	84	89	64-118	2	12	
Fluoride	mg/L	0.87	2.5	2.5	3.4	3.5	100	104	75-110	2	10	
Sulfate	mg/L	138	100	100	222	221	83	83	61-119	0	10	

QUALIFIERS

Project: Rico-Argentine Mine Site

Pace Project No.: 60130843

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

PASI-M Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rico-Argentine Mine Site

Pace Project No.: 60130843

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60130843008	DR3A1210090900	EPA 200.7	MPRP/19903	EPA 200.7	ICP/16349
60130843008	DR3A1210090900	EPA 200.7	MPRP/19904	EPA 200.7	ICP/16350
60130843008	DR3A1210090900	EPA 200.8	MPRP/19905	EPA 200.8	ICPM/1706
60130843008	DR3A1210090900	EPA 200.8	ICPM/35690	EPA 200.8	ICPM/14086
60130843008	DR3A1210090900	EPA 200.8	MPRP/19901	EPA 200.8	ICPM/1708
60130843008	DR3A1210090900	SM 2320B	WET/37614		
60130843008	DR3A1210090900	EPA 300.0	WETA/21998		

October 15, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60130946

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on October 11, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 09, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130946

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414

A2LA Certification #: 2926.01

Alaska Certification #: UST-078

Alaska Certification #MN00064

Arizona Certification #: AZ-0014

Arkansas Certification #: 88-0680

California Certification #: 01155CA

Colorado Certification #Pace

Connecticut Certification #: PH-0256

EPA Region 8 Certification #: Pace

Florida/NELAP Certification #: E87605

Georgia Certification #: 959

Hawaii Certification #Pace

Idaho Certification #: MN00064

Illinois Certification #: 200011

Kansas Certification #: E-10167

Louisiana Certification #: 03086

Louisiana Certification #: LA080009

Maine Certification #: 2007029

Maryland Certification #: 322

Michigan DEQ Certification #: 9909

Minnesota Certification #: 027-053-137

Mississippi Certification #: Pace

Montana Certification #: MT CERT0092

Nevada Certification #: MN_00064

Nebraska Certification #: Pace

New Jersey Certification #: MN-002

New York Certification #: 11647

North Carolina Certification #: 530

North Dakota Certification #: R-036

North Dakota Certification #: R-036A

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Certification #: MN200001

Oregon Certification #: MN300001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification

Tennessee Certification #: 02818

Texas Certification #: T104704192

Utah Certification #: MN00064

Virginia/DCLS Certification #: 002521

Virginia/VELAP Certification #: 460163

Washington Certification #: C754

West Virginia Certification #: 382

Wisconsin Certification #: 999407970

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

SAMPLE SUMMARY

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130946

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60130946008	DR3A1210100900	Water	10/10/12 09:00	10/11/12 10:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130946

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60130946008	DR3A1210100900	EPA 200.7	JGP	5	PASI-K
		EPA 200.7	JGP	5	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	SMW	10	PASI-K
		EPA 200.8	AS2	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60130946

Method: EPA 200.7
Description: 200.7 Metals, Total
Client: BP AMEC
Date: October 15, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19917

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60130946008

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1077561)
 - Calcium
 - Potassium
- MSD (Lab ID: 1077562)
 - Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60130946

Method: EPA 200.7
Description: 200.7 Metals, Dissolved
Client: BP AMEC
Date: October 15, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19916

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60130946008

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1077557)
- Calcium, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130946

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: October 15, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/19919

B: Analyte was detected in the associated method blank.

- DR3A1210100900 (Lab ID: 60130946008)
- Lead

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60130946

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: October 15, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/19918

B: Analyte was detected in the associated method blank.

- DR3A1210100900 (Lab ID: 60130946008)
 - Lead, Dissolved

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210100900 (Lab ID: 60130946008)
 - Nickel, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130946

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: October 15, 2012

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60130946

Method: EPA 300.0
Description: 300.0 IC Anions 28 Days
Client: BP AMEC
Date: October 15, 2012

General Information:

1 sample was analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: WETA/21998

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60129926001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1077291)
- Bromide

Additional Comments:

Analyte Comments:

QC Batch: WETA/21998

B: Analyte was detected in the associated method blank.

- DR3A1210100900 (Lab ID: 60130946008)
- Bromide

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130946

Sample: DR3A1210100900 Lab ID: 60130946008 Collected: 10/10/12 09:00 Received: 10/11/12 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	205000	ug/L	100	35.8	1	10/11/12 12:40	10/12/12 11:17	7440-70-2	M1
Iron	3600	ug/L	50.0	17.2	1	10/11/12 12:40	10/12/12 11:17	7439-89-6	
Magnesium	18800	ug/L	50.0	17.2	1	10/11/12 12:40	10/12/12 11:17	7439-95-4	
Potassium	73900	ug/L	500	64.1	1	10/11/12 12:40	10/12/12 11:17	7440-09-7	M1
Sodium	11300	ug/L	500	40.1	1	10/11/12 12:40	10/12/12 11:17	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	202000	ug/L	100	35.8	1	10/11/12 12:40	10/12/12 11:30	7440-70-2	M1
Iron, Dissolved	85.5	ug/L	50.0	17.2	1	10/11/12 12:40	10/12/12 11:30	7439-89-6	
Magnesium, Dissolved	18700	ug/L	50.0	17.2	1	10/11/12 12:40	10/12/12 11:30	7439-95-4	
Potassium, Dissolved	73200	ug/L	500	64.1	1	10/11/12 12:40	10/12/12 11:30	7440-09-7	
Sodium, Dissolved	11200	ug/L	500	40.1	1	10/11/12 12:40	10/12/12 11:30	7440-23-5	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	ND	ug/L	10.0	1.4	10	10/11/12 12:40	10/12/12 20:21	7440-38-2	
Cadmium	14.6	ug/L	5.0	0.97	10	10/11/12 12:40	10/12/12 20:21	7440-43-9	
Chromium	2.1J	ug/L	10.0	1.1	10	10/11/12 12:40	10/12/12 20:21	7440-47-3	
Cobalt	2.6J	ug/L	10.0	0.48	10	10/11/12 12:40	10/12/12 20:21	7440-48-4	
Copper	37.8	ug/L	10.0	4.5	10	10/11/12 12:40	10/12/12 20:21	7440-50-8	
Lead	2.9J	ug/L	10.0	0.51	10	10/11/12 12:40	10/12/12 20:21	7439-92-1	B
Manganese	1800	ug/L	10.0	2.3	10	10/11/12 12:40	10/12/12 20:21	7439-96-5	M6
Nickel	ND	ug/L	10.0	3.5	10	10/11/12 12:40	10/12/12 20:21	7440-02-0	
Selenium	ND	ug/L	10.0	3.5	10	10/11/12 12:40	10/12/12 20:21	7782-49-2	
Zinc	3060	ug/L	100	16.0	10	10/11/12 12:40	10/12/12 20:21	7440-66-6	M6
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	290	ug/L	2.5	0.56	5	10/12/12 18:38	10/14/12 11:21	7439-93-2	
Arsenic, Dissolved	ND	ug/L	10.0	1.4	10	10/11/12 12:40	10/12/12 20:05	7440-38-2	
Cadmium, Dissolved	15.1	ug/L	5.0	0.97	10	10/11/12 12:40	10/12/12 20:05	7440-43-9	D9
Chromium, Dissolved	1.3J	ug/L	10.0	1.1	10	10/11/12 12:40	10/12/12 20:05	7440-47-3	
Cobalt, Dissolved	2.9J	ug/L	10.0	0.48	10	10/11/12 12:40	10/12/12 20:05	7440-48-4	
Copper, Dissolved	ND	ug/L	10.0	4.5	10	10/11/12 12:40	10/12/12 20:05	7440-50-8	
Lead, Dissolved	1.6J	ug/L	10.0	0.51	10	10/11/12 12:40	10/12/12 20:05	7439-92-1	B
Manganese, Dissolved	1870	ug/L	10.0	2.3	10	10/11/12 12:40	10/12/12 20:05	7439-96-5	D9,M6
Nickel, Dissolved	ND	ug/L	10.0	3.5	10	10/11/12 12:40	10/12/12 20:05	7440-02-0	D3
Selenium, Dissolved	ND	ug/L	10.0	3.5	10	10/11/12 12:40	10/12/12 20:05	7782-49-2	
Zinc, Dissolved	3010	ug/L	100	16.0	10	10/11/12 12:40	10/12/12 20:05	7440-66-6	M6
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	115	mg/L	20.0	1.2	1		10/12/12 09:04		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/12/12 09:04		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/12/12 09:04		
Alkalinity, Total as CaCO3	115	mg/L	20.0	1.2	1		10/12/12 09:04		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130946

Sample: DR3A1210100900		Lab ID: 60130946008		Collected: 10/10/12 09:00		Received: 10/11/12 10:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.25J	mg/L	1.0	0.059	1		10/12/12 15:24	24959-67-9	B
Chloride	2.0	mg/L	1.0	0.50	1		10/12/12 15:24	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.027	1		10/12/12 15:24	16984-48-8	
Sulfate	577	mg/L	100	34.0	100		10/12/12 16:16	14808-79-8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130946

QC Batch: ICPM/35690

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60130946008

METHOD BLANK: 1308443

Matrix: Water

Associated Lab Samples: 60130946008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lithium, Dissolved	ug/L	ND	0.50	10/13/12 18:21	

LABORATORY CONTROL SAMPLE: 1308444

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lithium, Dissolved	ug/L	80	81.0	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1308445 1308446

Parameter	Units	60130556007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lithium, Dissolved	ug/L	77.2	80	80	161	157	105	99	70-130	3	20	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130946

QC Batch: MPRP/19917

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60130946008

METHOD BLANK: 1077559

Matrix: Water

Associated Lab Samples: 60130946008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	ug/L	ND	100	10/12/12 11:13	
Iron	ug/L	ND	50.0	10/12/12 11:13	
Magnesium	ug/L	ND	50.0	10/12/12 11:13	
Potassium	ug/L	ND	500	10/12/12 11:13	
Sodium	ug/L	ND	500	10/12/12 11:13	

LABORATORY CONTROL SAMPLE: 1077560

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	9430	94	85-115	
Iron	ug/L	10000	9560	96	85-115	
Magnesium	ug/L	10000	9730	97	85-115	
Potassium	ug/L	10000	9790	98	85-115	
Sodium	ug/L	10000	10000	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1077561

1077562

Parameter	Units	60130946008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	205000	10000	10000	206000	206000	7	6	70-130	0	9	M1
Iron	ug/L	3600	10000	10000	12900	12700	93	91	70-130	1	10	
Magnesium	ug/L	18800	10000	10000	26900	27000	81	82	70-130	0	9	
Potassium	ug/L	73900	10000	10000	80700	81500	68	76	70-130	1	7	M1
Sodium	ug/L	11300	10000	10000	21000	21100	97	98	70-130	0	8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130946

QC Batch:	MPRP/19916	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Dissolved
Associated Lab Samples:	60130946008		

METHOD BLANK: 1077555 Matrix: Water

Associated Lab Samples: 60130946008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	10/12/12 11:28	
Iron, Dissolved	ug/L	ND	50.0	10/12/12 11:28	
Magnesium, Dissolved	ug/L	ND	50.0	10/12/12 11:28	
Potassium, Dissolved	ug/L	ND	500	10/12/12 11:28	
Sodium, Dissolved	ug/L	ND	500	10/12/12 11:28	

LABORATORY CONTROL SAMPLE: 1077556

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9480	95	85-115	
Iron, Dissolved	ug/L	10000	9540	95	85-115	
Magnesium, Dissolved	ug/L	10000	9830	98	85-115	
Potassium, Dissolved	ug/L	10000	9830	98	85-115	
Sodium, Dissolved	ug/L	10000	10000	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1077557 1077558

Parameter	Units	60130946008		MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max		
		Result	Conc.	Spike Conc.	Spike Conc.						RPD	RPD	Qual
Calcium, Dissolved	ug/L	202000	10000	10000	10000	207000	210000	50	81	70-130	1	9	M1
Iron, Dissolved	ug/L	85.5	10000	10000	10000	9360	9350	93	93	70-130	0	10	
Magnesium, Dissolved	ug/L	18700	10000	10000	10000	27100	27400	83	86	70-130	1	9	
Potassium, Dissolved	ug/L	73200	10000	10000	10000	80800	81000	76	79	70-130	0	7	
Sodium, Dissolved	ug/L	11200	10000	10000	10000	20800	20800	96	96	70-130	0	8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130946

QC Batch: MPRP/19919

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET

Associated Lab Samples: 60130946008

METHOD BLANK: 1077567

Matrix: Water

Associated Lab Samples: 60130946008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	10/12/12 19:57	
Cadmium	ug/L	ND	0.50	10/12/12 19:57	
Chromium	ug/L	ND	1.0	10/12/12 19:57	
Cobalt	ug/L	ND	1.0	10/12/12 19:57	
Copper	ug/L	ND	1.0	10/12/12 19:57	
Lead	ug/L	0.16J	1.0	10/12/12 19:57	
Manganese	ug/L	ND	1.0	10/12/12 19:57	
Nickel	ug/L	ND	1.0	10/12/12 19:57	
Selenium	ug/L	ND	1.0	10/12/12 19:57	
Zinc	ug/L	ND	10.0	10/12/12 19:57	

LABORATORY CONTROL SAMPLE: 1077568

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	40.7	102	85-115	
Cadmium	ug/L	40	39.5	99	85-115	
Chromium	ug/L	40	39.7	99	85-115	
Cobalt	ug/L	40	39.1	98	85-115	
Copper	ug/L	40	39.2	98	85-115	
Lead	ug/L	40	38.9	97	85-115	
Manganese	ug/L	40	39.6	99	85-115	
Nickel	ug/L	40	39.2	98	85-115	
Selenium	ug/L	40	39.2	98	85-115	
Zinc	ug/L	100	103	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1077569

1077570

Parameter	Units	60130946008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	ND	40	40	42.5	43.6	105	108	70-130	2	20	
Cadmium	ug/L	14.6	40	40	54.6	55.6	100	102	70-130	2	20	
Chromium	ug/L	2.1J	40	40	40.6	42.0	96	100	70-130	4	20	
Cobalt	ug/L	2.6J	40	40	41.3	41.7	97	98	70-130	1	20	
Copper	ug/L	37.8	40	40	77.0	78.1	98	101	70-130	1	20	
Lead	ug/L	2.9J	40	40	41.0	41.8	95	97	70-130	2	20	
Manganese	ug/L	1800	40	40	1810	1840	35	120	70-130	2	20 M6	
Nickel	ug/L	ND	40	40	41.8	40.9	98	96	70-130	2	20	
Selenium	ug/L	ND	40	40	38.1	40.6	94	100	70-130	6	20	
Zinc	ug/L	3060	100	100	3140	3200	80	145	70-130	2	20 M6	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130946

QC Batch: MPRP/19918

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60130946008

METHOD BLANK: 1077563

Matrix: Water

Associated Lab Samples: 60130946008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	10/12/12 19:57	
Cadmium, Dissolved	ug/L	ND	0.50	10/12/12 19:57	
Chromium, Dissolved	ug/L	ND	1.0	10/12/12 19:57	
Cobalt, Dissolved	ug/L	ND	1.0	10/12/12 19:57	
Copper, Dissolved	ug/L	ND	1.0	10/12/12 19:57	
Lead, Dissolved	ug/L	0.16J	1.0	10/12/12 19:57	
Manganese, Dissolved	ug/L	ND	1.0	10/12/12 19:57	
Nickel, Dissolved	ug/L	ND	1.0	10/12/12 19:57	
Selenium, Dissolved	ug/L	ND	1.0	10/12/12 19:57	
Zinc, Dissolved	ug/L	ND	10.0	10/12/12 19:57	

LABORATORY CONTROL SAMPLE: 1077564

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	40.7	102	85-115	
Cadmium, Dissolved	ug/L	40	39.5	99	85-115	
Chromium, Dissolved	ug/L	40	39.7	99	85-115	
Cobalt, Dissolved	ug/L	40	39.1	98	85-115	
Copper, Dissolved	ug/L	40	39.2	98	85-115	
Lead, Dissolved	ug/L	40	38.9	97	85-115	
Manganese, Dissolved	ug/L	40	39.6	99	85-115	
Nickel, Dissolved	ug/L	40	39.2	98	85-115	
Selenium, Dissolved	ug/L	40	39.2	98	85-115	
Zinc, Dissolved	ug/L	100	103	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1077565 1077566

Parameter	Units	60130946008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	ND	40	40	41.5	42.0	103	104	70-130	1	20	
Cadmium, Dissolved	ug/L	15.1	40	40	52.7	52.6	94	94	70-130	0	20	
Chromium, Dissolved	ug/L	1.3J	40	40	41.2	39.3	100	95	70-130	5	20	
Cobalt, Dissolved	ug/L	2.9J	40	40	41.6	41.5	97	97	70-130	0	20	
Copper, Dissolved	ug/L	ND	40	40	41.9	42.2	96	97	70-130	1	20	
Lead, Dissolved	ug/L	1.6J	40	40	40.1	39.2	96	94	70-130	2	20	
Manganese, Dissolved	ug/L	1870	40	40	1790	1780	-198	-228	70-130	1	20 M6	
Nickel, Dissolved	ug/L	ND	40	40	40.9	42.3	96	99	70-130	3	20	
Selenium, Dissolved	ug/L	ND	40	40	38.6	40.2	95	99	70-130	4	20	
Zinc, Dissolved	ug/L	3010	100	100	2930	2930	-75	-77	70-130	0	20 M6	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130946

QC Batch: WET/37637

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60130946008

METHOD BLANK: 1078074

Matrix: Water

Associated Lab Samples: 60130946008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	10/12/12 08:25	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	10/12/12 08:25	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	10/12/12 08:25	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	10/12/12 08:25	

LABORATORY CONTROL SAMPLE: 1078075

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	469	94	90-110	

SAMPLE DUPLICATE: 1078076

Parameter	Units	60130706001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	3.9J	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	125	120	4	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	122	120	1	9	

SAMPLE DUPLICATE: 1078077

Parameter	Units	60130946008 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	115	116	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	115	116	1	9	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130946

QC Batch: WETA/21998

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60130946008

METHOD BLANK: 1077288

Matrix: Water

Associated Lab Samples: 60130946008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	0.12J	1.0	10/12/12 10:28	
Chloride	mg/L	ND	1.0	10/12/12 10:28	
Fluoride	mg/L	ND	0.20	10/12/12 10:28	
Sulfate	mg/L	ND	1.0	10/12/12 10:28	

LABORATORY CONTROL SAMPLE: 1077289

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.8	96	90-110	
Chloride	mg/L	5	4.8	97	90-110	
Fluoride	mg/L	2.5	2.4	97	90-110	
Sulfate	mg/L	5	5.1	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1077290

1077291

Parameter	Units	60129926001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	2.1	5	5	6.1	5.8	80	74	75-119	5	10	M1
Chloride	mg/L	163	100	100	247	252	84	89	64-118	2	12	
Fluoride	mg/L	0.87	2.5	2.5	3.4	3.5	100	104	75-110	2	10	
Sulfate	mg/L	138	100	100	222	221	83	83	61-119	0	10	

QUALIFIERS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130946

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

PASI-M Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60130946

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60130946008	DR3A1210100900	EPA 200.7	MPRP/19917	EPA 200.7	ICP/16362
60130946008	DR3A1210100900	EPA 200.7	MPRP/19916	EPA 200.7	ICP/16361
60130946008	DR3A1210100900	EPA 200.8	MPRP/19919	EPA 200.8	ICPM/1710
60130946008	DR3A1210100900	EPA 200.8	ICPM/35690	EPA 200.8	ICPM/14086
60130946008	DR3A1210100900	EPA 200.8	MPRP/19918	EPA 200.8	ICPM/1709
60130946008	DR3A1210100900	SM 2320B	WET/37637		
60130946008	DR3A1210100900	EPA 300.0	WETA/21998		

October 22, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: Rico-Argentine Mine Site
Pace Project No.: 60131150

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on October 13, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Rico-Argentine Mine Site

Pace Project No.: 60131150

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414

A2LA Certification #: 2926.01

Alaska Certification #: UST-078

Alaska Certification #MN00064

Arizona Certification #: AZ-0014

Arkansas Certification #: 88-0680

California Certification #: 01155CA

Colorado Certification #Pace

Connecticut Certification #: PH-0256

EPA Region 8 Certification #: Pace

Florida/NELAP Certification #: E87605

Georgia Certification #: 959

Hawaii Certification #Pace

Idaho Certification #: MN00064

Illinois Certification #: 200011

Kansas Certification #: E-10167

Louisiana Certification #: 03086

Louisiana Certification #: LA080009

Maine Certification #: 2007029

Maryland Certification #: 322

Michigan DEQ Certification #: 9909

Minnesota Certification #: 027-053-137

Mississippi Certification #: Pace

Montana Certification #: MT CERT0092

Nevada Certification #: MN_00064

Nebraska Certification #: Pace

New Jersey Certification #: MN-002

New York Certification #: 11647

North Carolina Certification #: 530

North Dakota Certification #: R-036

North Dakota Certification #: R-036A

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Certification #: MN200001

Oregon Certification #: MN300001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification

Tennessee Certification #: 02818

Texas Certification #: T104704192

Utah Certification #: MN00064

Virginia/DCLS Certification #: 002521

Virginia/VELAP Certification #: 460163

Washington Certification #: C754

West Virginia Certification #: 382

Wisconsin Certification #: 999407970

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Rico-Argentine Mine Site

Pace Project No.: 60131150

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60131150001	DR3A1210120900	Water	10/12/12 09:00	10/13/12 09:10

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Rico-Argentine Mine Site

Pace Project No.: 60131150

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60131150001	DR3A1210120900	EPA 200.7	SMW	5	PASI-K
		EPA 200.7	SMW	5	PASI-K
		EPA 200.8	JGP	10	PASI-K
		EPA 200.8	JGP	10	PASI-K
		EPA 200.8	RJS	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60131150

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: October 22, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19970

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60131150001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1079619)
 - Calcium
- MSD (Lab ID: 1079620)
 - Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60131150

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: October 22, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19971

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60131150001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1079624)
- Calcium, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60131150

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: October 22, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/19968

B: Analyte was detected in the associated method blank.

- DR3A1210120900 (Lab ID: 60131150001)
 - Zinc
 - Manganese

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210120900 (Lab ID: 60131150001)
 - Arsenic
 - Selenium
 - Chromium

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60131150

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: October 22, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/19966

B: Analyte was detected in the associated method blank.

- DR3A1210120900 (Lab ID: 60131150001)
 - Manganese, Dissolved
 - Zinc, Dissolved

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210120900 (Lab ID: 60131150001)
 - Arsenic, Dissolved
 - Chromium, Dissolved
 - Copper, Dissolved
 - Lead, Dissolved
 - Selenium, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60131150

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: October 22, 2012

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60131150

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: October 22, 2012

General Information:

1 sample was analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60131150

Sample: DR3A1210120900 Lab ID: 60131150001 Collected: 10/12/12 09:00 Received: 10/13/12 09:10 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	220000	ug/L	100	35.8	1	10/15/12 10:00	10/16/12 10:28	7440-70-2	M1
Iron	4000	ug/L	50.0	17.2	1	10/15/12 10:00	10/16/12 10:28	7439-89-6	
Magnesium	18500	ug/L	50.0	17.2	1	10/15/12 10:00	10/16/12 10:28	7439-95-4	
Potassium	58300	ug/L	500	64.1	1	10/15/12 10:00	10/16/12 10:28	7440-09-7	
Sodium	11800	ug/L	500	40.1	1	10/15/12 10:00	10/16/12 10:28	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	199000	ug/L	100	35.8	1	10/15/12 10:00	10/15/12 15:26	7440-70-2	M1
Iron, Dissolved	249	ug/L	50.0	17.2	1	10/15/12 10:00	10/16/12 09:47	7439-89-6	
Magnesium, Dissolved	18300	ug/L	50.0	17.2	1	10/15/12 10:00	10/16/12 09:47	7439-95-4	
Potassium, Dissolved	58200	ug/L	500	64.1	1	10/15/12 10:00	10/15/12 15:26	7440-09-7	
Sodium, Dissolved	11800	ug/L	500	40.1	1	10/15/12 10:00	10/15/12 15:26	7440-23-5	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	ND	ug/L	10.0	1.4	10	10/15/12 10:00	10/15/12 18:54	7440-38-2	D3
Cadmium	15.5	ug/L	5.0	0.97	10	10/15/12 10:00	10/15/12 18:54	7440-43-9	
Chromium	ND	ug/L	10.0	1.1	10	10/15/12 10:00	10/15/12 18:54	7440-47-3	D3
Cobalt	2.6J	ug/L	10.0	0.48	10	10/15/12 10:00	10/15/12 18:54	7440-48-4	
Copper	37.0	ug/L	10.0	4.5	10	10/15/12 10:00	10/15/12 18:54	7440-50-8	
Lead	1.4J	ug/L	10.0	0.51	10	10/15/12 10:00	10/15/12 18:54	7439-92-1	
Manganese	1690	ug/L	10.0	2.3	10	10/15/12 10:00	10/15/12 18:54	7439-96-5	B,M6
Nickel	5.2J	ug/L	10.0	3.5	10	10/15/12 10:00	10/15/12 18:54	7440-02-0	
Selenium	ND	ug/L	10.0	3.5	10	10/15/12 10:00	10/15/12 18:54	7782-49-2	D3
Zinc	3020	ug/L	100	16.0	10	10/15/12 10:00	10/15/12 18:54	7440-66-6	B,M6
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	182	ug/L	2.5	0.56	5	10/16/12 21:49	10/17/12 11:33	7439-93-2	
Arsenic, Dissolved	ND	ug/L	10.0	1.4	10	10/15/12 10:00	10/15/12 19:19	7440-38-2	D3
Cadmium, Dissolved	15.4	ug/L	5.0	0.97	10	10/15/12 10:00	10/15/12 19:19	7440-43-9	
Chromium, Dissolved	ND	ug/L	10.0	1.1	10	10/15/12 10:00	10/15/12 19:19	7440-47-3	D3
Cobalt, Dissolved	2.8J	ug/L	10.0	0.48	10	10/15/12 10:00	10/15/12 19:19	7440-48-4	
Copper, Dissolved	ND	ug/L	10.0	4.5	10	10/15/12 10:00	10/15/12 19:19	7440-50-8	D3
Lead, Dissolved	ND	ug/L	10.0	0.51	10	10/15/12 10:00	10/15/12 19:19	7439-92-1	D3
Manganese, Dissolved	1830	ug/L	10.0	2.3	10	10/15/12 10:00	10/15/12 19:19	7439-96-5	B,D9, M6
Nickel, Dissolved	5.3J	ug/L	10.0	3.5	10	10/15/12 10:00	10/15/12 19:19	7440-02-0	
Selenium, Dissolved	ND	ug/L	10.0	3.5	10	10/15/12 10:00	10/15/12 19:19	7782-49-2	D3
Zinc, Dissolved	3120	ug/L	100	16.0	10	10/15/12 10:00	10/15/12 19:19	7440-66-6	B,D9, M6
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	111	mg/L	20.0	1.2	1		10/15/12 09:04		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/15/12 09:04		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/15/12 09:04		
Alkalinity, Total as CaCO3	111	mg/L	20.0	1.2	1		10/15/12 09:04		

ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60131150

Sample: DR3A1210120900		Lab ID: 60131150001	Collected: 10/12/12 09:00	Received: 10/13/12 09:10	Matrix: Water				
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.078	1		10/13/12 14:40	24959-67-9	
Chloride	2.4	mg/L	1.0	0.50	1		10/13/12 14:40	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/13/12 14:40	16984-48-8	
Sulfate	653	mg/L	100	12.0	100		10/13/12 14:58	14808-79-8	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60131150

QC Batch: ICPM/35746

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60131150001

METHOD BLANK: 1310716

Matrix: Water

Associated Lab Samples: 60131150001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lithium, Dissolved	ug/L	ND	0.50	10/17/12 11:23	

LABORATORY CONTROL SAMPLE: 1310717

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lithium, Dissolved	ug/L	80	79.2	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1310718 1310719

Parameter	Units	60131150001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lithium, Dissolved	ug/L	182	80	80	251	256	87	92	70-130	2	20	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60131150

QC Batch: MPRP/19970

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60131150001

METHOD BLANK: 1079617

Matrix: Water

Associated Lab Samples: 60131150001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	ug/L	ND	100	10/16/12 10:22	
Iron	ug/L	ND	50.0	10/16/12 10:22	
Magnesium	ug/L	ND	50.0	10/16/12 10:22	
Potassium	ug/L	ND	500	10/16/12 10:22	
Sodium	ug/L	ND	500	10/16/12 10:22	

LABORATORY CONTROL SAMPLE: 1079618

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	10100	101	85-115	
Iron	ug/L	10000	10200	102	85-115	
Magnesium	ug/L	10000	9700	97	85-115	
Potassium	ug/L	10000	10300	103	85-115	
Sodium	ug/L	10000	10800	108	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1079619

1079620

Parameter	Units	60131150001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	220000	10000	10000	223000	222000	35	21	70-130	1	9	M1
Iron	ug/L	4000	10000	10000	13800	13900	98	99	70-130	1	10	
Magnesium	ug/L	18500	10000	10000	27000	26900	85	84	70-130	0	9	
Potassium	ug/L	58300	10000	10000	67300	67400	90	91	70-130	0	7	
Sodium	ug/L	11800	10000	10000	22500	22500	107	107	70-130	0	8	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60131150

QC Batch: MPRP/19971

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60131150001

METHOD BLANK: 1079621

Matrix: Water

Associated Lab Samples: 60131150001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	10/15/12 15:20	
Iron, Dissolved	ug/L	ND	50.0	10/16/12 09:41	
Magnesium, Dissolved	ug/L	ND	50.0	10/16/12 09:41	
Potassium, Dissolved	ug/L	ND	500	10/15/12 15:20	
Sodium, Dissolved	ug/L	ND	500	10/15/12 15:20	

LABORATORY CONTROL SAMPLE: 1079622

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9410	94	85-115	
Iron, Dissolved	ug/L	10000	10200	102	85-115	
Magnesium, Dissolved	ug/L	10000	9860	99	85-115	
Potassium, Dissolved	ug/L	10000	10400	104	85-115	
Sodium, Dissolved	ug/L	10000	11100	111	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1079623

1079624

Parameter	Units	60131150001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium, Dissolved	ug/L	199000	10000	10000	206000	203000	78	43	70-130	2	9	M1
Iron, Dissolved	ug/L	249	10000	10000	10100	10100	98	98	70-130	0	10	
Magnesium, Dissolved	ug/L	18300	10000	10000	27200	27200	89	89	70-130	0	9	
Potassium, Dissolved	ug/L	58200	10000	10000	68500	68600	103	104	70-130	0	7	
Sodium, Dissolved	ug/L	11800	10000	10000	23000	22900	111	110	70-130	0	8	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60131150

QC Batch: MPRP/19968 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60131150001

METHOD BLANK: 1079609 Matrix: Water
Associated Lab Samples: 60131150001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	10/15/12 18:48	
Cadmium	ug/L	ND	0.50	10/15/12 18:48	
Chromium	ug/L	ND	1.0	10/15/12 18:48	
Cobalt	ug/L	ND	1.0	10/15/12 18:48	
Copper	ug/L	ND	1.0	10/15/12 18:48	
Lead	ug/L	ND	1.0	10/15/12 18:48	
Manganese	ug/L	0.40J	1.0	10/15/12 18:48	
Nickel	ug/L	ND	1.0	10/15/12 18:48	
Selenium	ug/L	ND	1.0	10/15/12 18:48	
Zinc	ug/L	4.3J	10.0	10/15/12 18:48	

LABORATORY CONTROL SAMPLE: 1079610

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	39.8	100	85-115	
Cadmium	ug/L	40	39.4	98	85-115	
Chromium	ug/L	40	41.0	102	85-115	
Cobalt	ug/L	40	40.1	100	85-115	
Copper	ug/L	40	40.1	100	85-115	
Lead	ug/L	40	39.4	98	85-115	
Manganese	ug/L	40	40.6	101	85-115	
Nickel	ug/L	40	40.7	102	85-115	
Selenium	ug/L	40	39.5	99	85-115	
Zinc	ug/L	100	106	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1079611 1079612

Parameter	Units	60131150001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	ND	40	40	40.4	38.8	100	96	70-130	4	20	
Cadmium	ug/L	15.5	40	40	56.2	54.1	102	96	70-130	4	20	
Chromium	ug/L	ND	40	40	41.0	39.2	101	97	70-130	4	20	
Cobalt	ug/L	2.6J	40	40	43.3	41.7	102	98	70-130	4	20	
Copper	ug/L	37.0	40	40	79.5	74.8	106	95	70-130	6	20	
Lead	ug/L	1.4J	40	40	40.8	39.8	98	96	70-130	3	20	
Manganese	ug/L	1690	40	40	1830	1780	358	238	70-130	3	20 M6	
Nickel	ug/L	5.2J	40	40	45.8	45.1	102	100	70-130	2	20	
Selenium	ug/L	ND	40	40	39.4	37.5	97	92	70-130	5	20	
Zinc	ug/L	3020	100	100	3300	3200	284	175	70-130	3	20 M6	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60131150

QC Batch: MPRP/19966 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60131150001

METHOD BLANK: 1079601 Matrix: Water
Associated Lab Samples: 60131150001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	10/15/12 19:13	
Cadmium, Dissolved	ug/L	ND	0.50	10/15/12 19:13	
Chromium, Dissolved	ug/L	ND	1.0	10/15/12 19:13	
Cobalt, Dissolved	ug/L	ND	1.0	10/15/12 19:13	
Copper, Dissolved	ug/L	ND	1.0	10/15/12 19:13	
Lead, Dissolved	ug/L	ND	1.0	10/15/12 19:13	
Manganese, Dissolved	ug/L	0.50J	1.0	10/15/12 19:13	
Nickel, Dissolved	ug/L	ND	1.0	10/15/12 19:13	
Selenium, Dissolved	ug/L	ND	1.0	10/15/12 19:13	
Zinc, Dissolved	ug/L	3.9J	10.0	10/15/12 19:13	

LABORATORY CONTROL SAMPLE: 1079602

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	39.3	98	85-115	
Cadmium, Dissolved	ug/L	40	40.6	102	85-115	
Chromium, Dissolved	ug/L	40	41.6	104	85-115	
Cobalt, Dissolved	ug/L	40	41.3	103	85-115	
Copper, Dissolved	ug/L	40	40.9	102	85-115	
Lead, Dissolved	ug/L	40	40.7	102	85-115	
Manganese, Dissolved	ug/L	40	41.2	103	85-115	
Nickel, Dissolved	ug/L	40	41.6	104	85-115	
Selenium, Dissolved	ug/L	40	39.6	99	85-115	
Zinc, Dissolved	ug/L	100	110	110	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1079603 1079604

Parameter	Units	60131150001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	ND	40	40	39.5	38.5	98	96	70-130	2	20	
Cadmium, Dissolved	ug/L	15.4	40	40	55.3	54.5	100	98	70-130	1	20	
Chromium, Dissolved	ug/L	ND	40	40	41.4	40.6	103	101	70-130	2	20	
Cobalt, Dissolved	ug/L	2.8J	40	40	42.8	42.9	100	100	70-130	0	20	
Copper, Dissolved	ug/L	ND	40	40	44.2	43.7	99	98	70-130	1	20	
Lead, Dissolved	ug/L	ND	40	40	39.1	39.6	98	99	70-130	1	20	
Manganese, Dissolved	ug/L	1830	40	40	1820	1790	-8	-82	70-130	2	20 M6	
Nickel, Dissolved	ug/L	5.3J	40	40	45.5	45.4	100	100	70-130	0	20	
Selenium, Dissolved	ug/L	ND	40	40	37.9	39.8	94	99	70-130	5	20	
Zinc, Dissolved	ug/L	3120	100	100	3140	3110	29	-6	70-130	1	20 M6	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60131150

QC Batch: WET/37673 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60131150001

METHOD BLANK: 1079450 Matrix: Water
Associated Lab Samples: 60131150001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	10/15/12 08:55	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	10/15/12 08:55	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	10/15/12 08:55	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	10/15/12 08:55	

LABORATORY CONTROL SAMPLE: 1079451

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	475	95	90-110	

SAMPLE DUPLICATE: 1079452

Parameter	Units	60131150001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	111	110	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	111	110	1	9	

SAMPLE DUPLICATE: 1079453

Parameter	Units	60130935003 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	723	745	3	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	723	745	3	9	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60131150

QC Batch: WETA/22033 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60131150001

METHOD BLANK: 1079163 Matrix: Water
Associated Lab Samples: 60131150001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	10/13/12 13:46	
Chloride	mg/L	ND	1.0	10/13/12 13:46	
Fluoride	mg/L	ND	0.20	10/13/12 13:46	
Sulfate	mg/L	ND	1.0	10/13/12 13:46	

LABORATORY CONTROL SAMPLE: 1079164

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.1	101	90-110	
Chloride	mg/L	5	4.9	99	90-110	
Fluoride	mg/L	2.5	2.5	98	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1079165 1079166

Parameter	Units	60131150001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	ND	5	5	5.1	5.1	102	102	75-119	0	10	
Chloride	mg/L	2.4	5	5	6.5	6.4	81	81	64-118	1	12	
Fluoride	mg/L	2.2	2.5	2.5	4.7	4.7	99	99	75-110	0	10	
Sulfate	mg/L	653	500	500	1070	1100	83	90	61-119	3	10	

MATRIX SPIKE SAMPLE: 1079167

Parameter	Units	60130298001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	50	54.4	94	75-119	
Chloride	mg/L	358	250	590	93	64-118	
Fluoride	mg/L	ND	25	24.1	96	75-110	
Sulfate	mg/L	66.7	50	113	93	61-119	

QUALIFIERS

Project: Rico-Argentine Mine Site

Pace Project No.: 60131150

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

PASI-M Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rico-Argentine Mine Site

Pace Project No.: 60131150

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60131150001	DR3A1210120900	EPA 200.7	MPRP/19970	EPA 200.7	ICP/16392
60131150001	DR3A1210120900	EPA 200.7	MPRP/19971	EPA 200.7	ICP/16393
60131150001	DR3A1210120900	EPA 200.8	MPRP/19968	EPA 200.8	ICPM/1721
60131150001	DR3A1210120900	EPA 200.8	ICPM/35746	EPA 200.8	ICPM/14141
60131150001	DR3A1210120900	EPA 200.8	MPRP/19966	EPA 200.8	ICPM/1720
60131150001	DR3A1210120900	SM 2320B	WET/37673		
60131150001	DR3A1210120900	EPA 300.0	WETA/22033		

October 22, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60131225

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on October 16, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131225

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: Pace
Florida/NELAP Certification #: E87605
Georgia Certification #: 959
Hawaii Certification #Pace
Idaho Certification #: MN00064
Illinois Certification #: 200011
Kansas Certification #: E-10167
Louisiana Certification #: 03086
Louisiana Certification #: LA080009
Maine Certification #: 2007029
Maryland Certification #: 322
Michigan DEQ Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace

Montana Certification #: MT CERT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Dakota Certification #: R-036
North Dakota Certification #: R-036A
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Tennessee Certification #: 02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia/DCLS Certification #: 002521
Virginia/VELAP Certification #: 460163
Washington Certification #: C754
West Virginia Certification #: 382
Wisconsin Certification #: 999407970

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
A2LA Certification #: 2456.01
Arkansas Certification #: 12-019-0
Illinois Certification #: 002885
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-12-3
Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131225

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60131225001	DR3A1210130900	Water	10/13/12 09:00	10/16/12 10:00
60131225002	DR3A1210140900	Water	10/14/12 09:00	10/16/12 10:00
60131225003	DR3A1210150900	Water	10/15/12 09:00	10/16/12 10:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131225

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60131225001	DR3A1210130900	EPA 200.7	SMW	5	PASI-K
		EPA 200.7	SMW	5	PASI-K
		EPA 200.8	JGP	10	PASI-K
		EPA 200.8	JGP	10	PASI-K
		EPA 200.8	AS2	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60131225002	DR3A1210140900	EPA 200.7	SMW	5	PASI-K
		EPA 200.7	SMW	5	PASI-K
		EPA 200.8	JGP	10	PASI-K
		EPA 200.8	JGP	10	PASI-K
		EPA 200.8	AS2	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K
60131225003	DR3A1210150900	EPA 200.7	SMW	5	PASI-K
		EPA 200.7	SMW	5	PASI-K
		EPA 200.8	JGP	10	PASI-K
		EPA 200.8	JGP	10	PASI-K
		EPA 200.8	AS2	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60131225

Method: EPA 200.7
Description: 200.7 Metals, Total
Client: BP AMEC
Date: October 22, 2012

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19994

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60131225003

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1080293)
 - Calcium
- MSD (Lab ID: 1080294)
 - Calcium

Additional Comments:

Analyte Comments:

QC Batch: MPRP/19994

B: Analyte was detected in the associated method blank.

- DR3A1210130900 (Lab ID: 60131225001)
 - Calcium
- DR3A1210140900 (Lab ID: 60131225002)
 - Calcium
- DR3A1210150900 (Lab ID: 60131225003)
 - Calcium

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60131225

Method: EPA 200.7
Description: 200.7 Metals, Dissolved
Client: BP AMEC
Date: October 22, 2012

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19993

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60131225003

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1080287)
- Calcium, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131225

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: October 22, 2012

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19997

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60131225003

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1080305)
 - Manganese
 - Zinc
- MSD (Lab ID: 1080306)
 - Manganese
 - Zinc

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131225

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: October 22, 2012

Analyte Comments:

QC Batch: MPRP/19997

B: Analyte was detected in the associated method blank.

- DR3A1210130900 (Lab ID: 60131225001)
 - Zinc
- DR3A1210140900 (Lab ID: 60131225002)
 - Zinc
- DR3A1210150900 (Lab ID: 60131225003)
 - Zinc

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210130900 (Lab ID: 60131225001)
 - Arsenic
 - Chromium
 - Selenium
- DR3A1210140900 (Lab ID: 60131225002)
 - Arsenic
 - Selenium
 - Chromium
- DR3A1210150900 (Lab ID: 60131225003)
 - Arsenic
 - Chromium
 - Selenium

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60131225

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: October 22, 2012

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/19996

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60131225003

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1080301)
 - Zinc, Dissolved
- MSD (Lab ID: 1080302)
 - Manganese, Dissolved
 - Zinc, Dissolved

Additional Comments:

Analyte Comments:

QC Batch: MPRP/19996

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210130900 (Lab ID: 60131225001)
 - Arsenic, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131225

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: October 22, 2012

Analyte Comments:

QC Batch: MPRP/19996

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210130900 (Lab ID: 60131225001)
 - Lead, Dissolved
 - Selenium, Dissolved
- DR3A1210140900 (Lab ID: 60131225002)
 - Arsenic, Dissolved
 - Chromium, Dissolved
 - Selenium, Dissolved
- DR3A1210150900 (Lab ID: 60131225003)
 - Arsenic, Dissolved
 - Chromium, Dissolved
 - Lead, Dissolved
 - Selenium, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131225

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: October 22, 2012

General Information:

3 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60131225

Method: EPA 300.0
Description: 300.0 IC Anions 28 Days
Client: BP AMEC
Date: October 22, 2012

General Information:

3 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131225

Sample: DR3A1210130900 Lab ID: 60131225001 Collected: 10/13/12 09:00 Received: 10/16/12 10:00 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	215000	ug/L	100	35.8	1	10/16/12 12:30	10/17/12 11:26	7440-70-2	B
Iron	4170	ug/L	50.0	17.2	1	10/16/12 12:30	10/17/12 11:26	7439-89-6	
Magnesium	18000	ug/L	50.0	17.2	1	10/16/12 12:30	10/17/12 11:26	7439-95-4	
Potassium	55600	ug/L	500	64.1	1	10/16/12 12:30	10/17/12 11:26	7440-09-7	
Sodium	11800	ug/L	500	40.1	1	10/16/12 12:30	10/17/12 11:26	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	222000	ug/L	100	35.8	1	10/16/12 12:30	10/17/12 10:26	7440-70-2	D9
Iron, Dissolved	367	ug/L	50.0	17.2	1	10/16/12 12:30	10/17/12 10:26	7439-89-6	
Magnesium, Dissolved	18800	ug/L	50.0	17.2	1	10/16/12 12:30	10/17/12 10:26	7439-95-4	D9
Potassium, Dissolved	56100	ug/L	500	64.1	1	10/16/12 12:30	10/17/12 10:26	7440-09-7	D9
Sodium, Dissolved	11800	ug/L	500	40.1	1	10/16/12 12:30	10/17/12 10:26	7440-23-5	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	ND	ug/L	5.0	0.70	5	10/16/12 12:30	10/17/12 17:58	7440-38-2	D3
Cadmium	17.1	ug/L	2.5	0.48	5	10/16/12 12:30	10/17/12 11:20	7440-43-9	
Chromium	ND	ug/L	5.0	0.55	5	10/16/12 12:30	10/17/12 11:20	7440-47-3	D3
Cobalt	2.7J	ug/L	5.0	0.24	5	10/16/12 12:30	10/17/12 11:20	7440-48-4	
Copper	41.7	ug/L	5.0	2.2	5	10/16/12 12:30	10/17/12 11:20	7440-50-8	
Lead	1.8J	ug/L	5.0	0.26	5	10/16/12 12:30	10/17/12 11:20	7439-92-1	
Manganese	1850	ug/L	5.0	1.2	5	10/16/12 12:30	10/17/12 11:20	7439-96-5	
Nickel	3.6J	ug/L	5.0	1.8	5	10/16/12 12:30	10/17/12 11:20	7440-02-0	
Selenium	ND	ug/L	5.0	1.8	5	10/16/12 12:30	10/17/12 11:20	7782-49-2	D3
Zinc	3240	ug/L	50.0	8.0	5	10/16/12 12:30	10/17/12 11:20	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	182	ug/L	0.50	0.11	1	10/17/12 15:53	10/18/12 12:58	7439-93-2	
Arsenic, Dissolved	ND	ug/L	5.0	0.70	5	10/16/12 12:30	10/17/12 18:40	7440-38-2	D3
Cadmium, Dissolved	15.3	ug/L	2.5	0.48	5	10/16/12 12:30	10/17/12 12:02	7440-43-9	
Chromium, Dissolved	1.0J	ug/L	5.0	0.55	5	10/16/12 12:30	10/17/12 12:02	7440-47-3	
Cobalt, Dissolved	2.6J	ug/L	5.0	0.24	5	10/16/12 12:30	10/17/12 12:02	7440-48-4	
Copper, Dissolved	3.5J	ug/L	5.0	2.2	5	10/16/12 12:30	10/17/12 12:02	7440-50-8	
Lead, Dissolved	ND	ug/L	5.0	0.26	5	10/16/12 12:30	10/17/12 12:02	7439-92-1	D3
Manganese, Dissolved	1800	ug/L	5.0	1.2	5	10/16/12 12:30	10/17/12 12:02	7439-96-5	
Nickel, Dissolved	4.0J	ug/L	5.0	1.8	5	10/16/12 12:30	10/17/12 12:02	7440-02-0	
Selenium, Dissolved	ND	ug/L	5.0	1.8	5	10/16/12 12:30	10/17/12 12:02	7782-49-2	D3
Zinc, Dissolved	3070	ug/L	50.0	8.0	5	10/16/12 12:30	10/17/12 12:02	7440-66-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	108	mg/L	20.0	1.2	1		10/17/12 08:08		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/17/12 08:08		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/17/12 08:08		
Alkalinity, Total as CaCO ₃	108	mg/L	20.0	1.2	1		10/17/12 08:08		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131225

Sample: DR3A1210130900		Lab ID: 60131225001		Collected: 10/13/12 09:00		Received: 10/16/12 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.078	1		10/17/12 13:16	24959-67-9	
Chloride	1.6	mg/L	1.0	0.50	1		10/17/12 13:16	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/17/12 13:16	16984-48-8	
Sulfate	640	mg/L	100	12.0	100		10/17/12 13:34	14808-79-8	

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131225

Sample: DR3A1210140900 Lab ID: 60131225002 Collected: 10/14/12 09:00 Received: 10/16/12 10:00 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	204000	ug/L	100	35.8	1	10/16/12 12:30	10/17/12 11:29	7440-70-2	B
Iron	3550	ug/L	50.0	17.2	1	10/16/12 12:30	10/17/12 11:29	7439-89-6	
Magnesium	17200	ug/L	50.0	17.2	1	10/16/12 12:30	10/17/12 11:29	7439-95-4	
Potassium	63700	ug/L	500	64.1	1	10/16/12 12:30	10/17/12 11:29	7440-09-7	
Sodium	11400	ug/L	500	40.1	1	10/16/12 12:30	10/17/12 11:29	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	214000	ug/L	100	35.8	1	10/16/12 12:30	10/17/12 10:30	7440-70-2	D9
Iron, Dissolved	293	ug/L	50.0	17.2	1	10/16/12 12:30	10/17/12 10:30	7439-89-6	
Magnesium, Dissolved	18100	ug/L	50.0	17.2	1	10/16/12 12:30	10/17/12 10:30	7439-95-4	D9
Potassium, Dissolved	64700	ug/L	500	64.1	1	10/16/12 12:30	10/17/12 10:30	7440-09-7	D9
Sodium, Dissolved	11600	ug/L	500	40.1	1	10/16/12 12:30	10/17/12 10:30	7440-23-5	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	ND	ug/L	5.0	0.70	5	10/16/12 12:30	10/17/12 18:02	7440-38-2	D3
Cadmium	15.8	ug/L	2.5	0.48	5	10/16/12 12:30	10/17/12 11:24	7440-43-9	
Chromium	ND	ug/L	5.0	0.55	5	10/16/12 12:30	10/17/12 11:24	7440-47-3	D3
Cobalt	2.8J	ug/L	5.0	0.24	5	10/16/12 12:30	10/17/12 11:24	7440-48-4	
Copper	39.2	ug/L	5.0	2.2	5	10/16/12 12:30	10/17/12 11:24	7440-50-8	
Lead	1.6J	ug/L	5.0	0.26	5	10/16/12 12:30	10/17/12 11:24	7439-92-1	
Manganese	1840	ug/L	5.0	1.2	5	10/16/12 12:30	10/17/12 11:24	7439-96-5	
Nickel	3.8J	ug/L	5.0	1.8	5	10/16/12 12:30	10/17/12 11:24	7440-02-0	
Selenium	ND	ug/L	5.0	1.8	5	10/16/12 12:30	10/17/12 11:24	7782-49-2	D3
Zinc	3090	ug/L	50.0	8.0	5	10/16/12 12:30	10/17/12 11:24	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	191	ug/L	0.50	0.11	1	10/17/12 15:53	10/18/12 13:32	7439-93-2	
Arsenic, Dissolved	ND	ug/L	5.0	0.70	5	10/16/12 12:30	10/17/12 18:44	7440-38-2	D3
Cadmium, Dissolved	14.0	ug/L	2.5	0.48	5	10/16/12 12:30	10/17/12 12:06	7440-43-9	
Chromium, Dissolved	ND	ug/L	5.0	0.55	5	10/16/12 12:30	10/17/12 12:06	7440-47-3	D3
Cobalt, Dissolved	2.6J	ug/L	5.0	0.24	5	10/16/12 12:30	10/17/12 12:06	7440-48-4	
Copper, Dissolved	4.2J	ug/L	5.0	2.2	5	10/16/12 12:30	10/17/12 12:06	7440-50-8	
Lead, Dissolved	0.42J	ug/L	5.0	0.26	5	10/16/12 12:30	10/17/12 12:06	7439-92-1	
Manganese, Dissolved	1730	ug/L	5.0	1.2	5	10/16/12 12:30	10/17/12 12:06	7439-96-5	
Nickel, Dissolved	3.6J	ug/L	5.0	1.8	5	10/16/12 12:30	10/17/12 12:06	7440-02-0	
Selenium, Dissolved	ND	ug/L	5.0	1.8	5	10/16/12 12:30	10/17/12 12:06	7782-49-2	D3
Zinc, Dissolved	2890	ug/L	50.0	8.0	5	10/16/12 12:30	10/17/12 12:06	7440-66-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO3)	110	mg/L	20.0	1.2	1		10/17/12 08:12		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/17/12 08:12		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/17/12 08:12		
Alkalinity, Total as CaCO3	110	mg/L	20.0	1.2	1		10/17/12 08:12		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131225

Sample: DR3A1210140900		Lab ID: 60131225002	Collected: 10/14/12 09:00	Received: 10/16/12 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.078	1		10/17/12 13:52	24959-67-9	
Chloride	1.8	mg/L	1.0	0.50	1		10/17/12 13:52	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/17/12 13:52	16984-48-8	
Sulfate	650	mg/L	100	12.0	100		10/17/12 14:10	14808-79-8	

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131225

Sample: DR3A1210150900 Lab ID: 60131225003 Collected: 10/15/12 09:00 Received: 10/16/12 10:00 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	201000	ug/L	100	35.8	1	10/16/12 12:30	10/17/12 11:33	7440-70-2	B,M1
Iron	3440	ug/L	50.0	17.2	1	10/16/12 12:30	10/17/12 11:33	7439-89-6	
Magnesium	17200	ug/L	50.0	17.2	1	10/16/12 12:30	10/17/12 11:33	7439-95-4	
Potassium	66700	ug/L	500	64.1	1	10/16/12 12:30	10/17/12 11:33	7440-09-7	
Sodium	11300	ug/L	500	40.1	1	10/16/12 12:30	10/17/12 11:33	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	214000	ug/L	100	35.8	1	10/16/12 12:30	10/17/12 10:33	7440-70-2	D9,M1
Iron, Dissolved	211	ug/L	50.0	17.2	1	10/16/12 12:30	10/17/12 10:33	7439-89-6	
Magnesium, Dissolved	18200	ug/L	50.0	17.2	1	10/16/12 12:30	10/17/12 10:33	7439-95-4	D9
Potassium, Dissolved	69200	ug/L	500	64.1	1	10/16/12 12:30	10/17/12 10:33	7440-09-7	D9
Sodium, Dissolved	11800	ug/L	500	40.1	1	10/16/12 12:30	10/17/12 10:33	7440-23-5	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	ND	ug/L	5.0	0.70	5	10/16/12 12:30	10/17/12 18:06	7440-38-2	D3
Cadmium	15.9	ug/L	2.5	0.48	5	10/16/12 12:30	10/17/12 11:29	7440-43-9	
Chromium	ND	ug/L	5.0	0.55	5	10/16/12 12:30	10/17/12 11:29	7440-47-3	D3
Cobalt	2.8J	ug/L	5.0	0.24	5	10/16/12 12:30	10/17/12 11:29	7440-48-4	
Copper	49.9	ug/L	5.0	2.2	5	10/16/12 12:30	10/17/12 11:29	7440-50-8	
Lead	1.6J	ug/L	5.0	0.26	5	10/16/12 12:30	10/17/12 11:29	7439-92-1	
Manganese	1840	ug/L	5.0	1.2	5	10/16/12 12:30	10/17/12 11:29	7439-96-5	M1
Nickel	3.6J	ug/L	5.0	1.8	5	10/16/12 12:30	10/17/12 11:29	7440-02-0	
Selenium	ND	ug/L	5.0	1.8	5	10/16/12 12:30	10/17/12 11:29	7782-49-2	D3
Zinc	3060	ug/L	50.0	8.0	5	10/16/12 12:30	10/17/12 11:29	7440-66-6	B,M1
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	169	ug/L	0.50	0.11	1	10/17/12 15:53	10/18/12 14:09	7439-93-2	
Arsenic, Dissolved	ND	ug/L	5.0	0.70	5	10/16/12 12:30	10/17/12 18:48	7440-38-2	D3
Cadmium, Dissolved	14.4	ug/L	2.5	0.48	5	10/16/12 12:30	10/17/12 12:10	7440-43-9	
Chromium, Dissolved	ND	ug/L	5.0	0.55	5	10/16/12 12:30	10/17/12 12:10	7440-47-3	D3
Cobalt, Dissolved	2.6J	ug/L	5.0	0.24	5	10/16/12 12:30	10/17/12 12:10	7440-48-4	
Copper, Dissolved	4.0J	ug/L	5.0	2.2	5	10/16/12 12:30	10/17/12 12:10	7440-50-8	
Lead, Dissolved	ND	ug/L	5.0	0.26	5	10/16/12 12:30	10/17/12 12:10	7439-92-1	D3
Manganese, Dissolved	1790	ug/L	5.0	1.2	5	10/16/12 12:30	10/17/12 12:10	7439-96-5	M1
Nickel, Dissolved	3.5J	ug/L	5.0	1.8	5	10/16/12 12:30	10/17/12 12:10	7440-02-0	
Selenium, Dissolved	ND	ug/L	5.0	1.8	5	10/16/12 12:30	10/17/12 12:10	7782-49-2	D3
Zinc, Dissolved	2890	ug/L	50.0	8.0	5	10/16/12 12:30	10/17/12 12:10	7440-66-6	M1
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	111	mg/L	20.0	1.2	1		10/17/12 08:16		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/17/12 08:16		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/17/12 08:16		
Alkalinity, Total as CaCO3	111	mg/L	20.0	1.2	1		10/17/12 08:16		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131225

Sample: DR3A1210150900		Lab ID: 60131225003		Collected: 10/15/12 09:00		Received: 10/16/12 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.078	1		10/17/12 14:28	24959-67-9	
Chloride	1.6	mg/L	1.0	0.50	1		10/17/12 14:28	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/17/12 14:28	16984-48-8	
Sulfate	642	mg/L	100	12.0	100		10/17/12 14:47	14808-79-8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131225

QC Batch: ICPM/35773 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60131225001, 60131225002, 60131225003

METHOD BLANK: 1311504 Matrix: Water

Associated Lab Samples: 60131225001, 60131225002, 60131225003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lithium, Dissolved	ug/L	ND	0.50	10/18/12 12:45	

LABORATORY CONTROL SAMPLE: 1311505

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lithium, Dissolved	ug/L	80	77.3	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1311506 1311507

Parameter	Units	60131225001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lithium, Dissolved	ug/L	182	80	80	250	249	85	83	70-130	.6	20	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131225

QC Batch: MPRP/19994 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60131225001, 60131225002, 60131225003

METHOD BLANK: 1080291 Matrix: Water

Associated Lab Samples: 60131225001, 60131225002, 60131225003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	ug/L	263	100	10/17/12 11:19	
Iron	ug/L	ND	50.0	10/17/12 11:19	
Magnesium	ug/L	ND	50.0	10/17/12 11:19	
Potassium	ug/L	ND	500	10/17/12 11:19	
Sodium	ug/L	ND	500	10/17/12 11:19	

LABORATORY CONTROL SAMPLE: 1080292

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	9760	98	85-115	
Iron	ug/L	10000	9680	97	85-115	
Magnesium	ug/L	10000	9480	95	85-115	
Potassium	ug/L	10000	10200	102	85-115	
Sodium	ug/L	10000	10600	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1080293 1080294

Parameter	Units	60131225003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	201000	10000	10000	217000	216000	161	149	70-130	1	9 M1	
Iron	ug/L	3440	10000	10000	13000	13100	96	97	70-130	1	10	
Magnesium	ug/L	17200	10000	10000	26800	27000	97	99	70-130	1	9	
Potassium	ug/L	66700	10000	10000	79500	79500	128	128	70-130	0	7	
Sodium	ug/L	11300	10000	10000	22600	22700	113	114	70-130	1	8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131225

QC Batch:	MPRP/19993	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Dissolved
Associated Lab Samples:	60131225001, 60131225002, 60131225003		

METHOD BLANK: 1080285 Matrix: Water

Associated Lab Samples: 60131225001, 60131225002, 60131225003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	10/17/12 10:20	
Iron, Dissolved	ug/L	ND	50.0	10/17/12 10:20	
Magnesium, Dissolved	ug/L	ND	50.0	10/17/12 10:20	
Potassium, Dissolved	ug/L	ND	500	10/17/12 10:20	
Sodium, Dissolved	ug/L	ND	500	10/17/12 10:20	

LABORATORY CONTROL SAMPLE: 1080286

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	10100	101	85-115	
Iron, Dissolved	ug/L	10000	10000	100	85-115	
Magnesium, Dissolved	ug/L	10000	9940	99	85-115	
Potassium, Dissolved	ug/L	10000	10200	102	85-115	
Sodium, Dissolved	ug/L	10000	10600	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1080287 1080288

Parameter	Units	60131225003		MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	Max		Qual
		Result	Conc.	Spike Conc.	Result	Spike Conc.	Result				RPD	RPD	
Calcium, Dissolved	ug/L	214000	10000	10000	218000	223000	41	92	70-130	2	9	M1	
Iron, Dissolved	ug/L	211	10000	10000	9950	9910	97	97	70-130	0	10		
Magnesium, Dissolved	ug/L	18200	10000	10000	27200	27600	89	93	70-130	1	9		
Potassium, Dissolved	ug/L	69200	10000	10000	77800	79700	86	105	70-130	2	7		
Sodium, Dissolved	ug/L	11800	10000	10000	22200	22800	105	111	70-130	3	8		

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131225

QC Batch: MPRP/19997 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60131225001, 60131225002, 60131225003

METHOD BLANK: 1080303 Matrix: Water

Associated Lab Samples: 60131225001, 60131225002, 60131225003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	10/17/12 17:50	
Cadmium	ug/L	ND	0.50	10/17/12 11:12	
Chromium	ug/L	ND	1.0	10/17/12 11:12	
Cobalt	ug/L	ND	1.0	10/17/12 11:12	
Copper	ug/L	ND	1.0	10/17/12 11:12	
Lead	ug/L	ND	1.0	10/17/12 11:12	
Manganese	ug/L	ND	1.0	10/17/12 11:12	
Nickel	ug/L	ND	1.0	10/17/12 11:12	
Selenium	ug/L	ND	1.0	10/17/12 11:12	
Zinc	ug/L	1.6J	10.0	10/17/12 11:12	

LABORATORY CONTROL SAMPLE: 1080304

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	41.3	103	85-115	
Cadmium	ug/L	40	41.5	104	85-115	
Chromium	ug/L	40	41.6	104	85-115	
Cobalt	ug/L	40	41.1	103	85-115	
Copper	ug/L	40	41.5	104	85-115	
Lead	ug/L	40	40.5	101	85-115	
Manganese	ug/L	40	41.6	104	85-115	
Nickel	ug/L	40	41.9	105	85-115	
Selenium	ug/L	40	42.8	107	85-115	
Zinc	ug/L	100	109	109	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1080305 1080306

Parameter	Units	60131225003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	ND	40	40	43.2	43.4	107	107	70-130	0	20	
Cadmium	ug/L	15.9	40	40	56.2	54.6	101	97	70-130	3	20	
Chromium	ug/L	ND	40	40	41.8	41.0	103	101	70-130	2	20	
Cobalt	ug/L	2.8J	40	40	42.5	41.8	99	97	70-130	2	20	
Copper	ug/L	49.9	40	40	87.1	84.0	93	85	70-130	4	20	
Lead	ug/L	1.6J	40	40	41.8	41.0	101	99	70-130	2	20	
Manganese	ug/L	1840	40	40	1830	1770	-38	-176	70-130	3	20	M1
Nickel	ug/L	3.6J	40	40	42.7	43.5	98	100	70-130	2	20	
Selenium	ug/L	ND	40	40	39.4	39.4	98	98	70-130	0	20	
Zinc	ug/L	3060	100	100	3090	3020	28	-40	70-130	2	20	M1

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131225

QC Batch: MPRP/19996 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60131225001, 60131225002, 60131225003

METHOD BLANK: 1080299 Matrix: Water

Associated Lab Samples: 60131225001, 60131225002, 60131225003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	10/17/12 18:31	
Cadmium, Dissolved	ug/L	ND	0.50	10/17/12 11:54	
Chromium, Dissolved	ug/L	ND	1.0	10/17/12 11:54	
Cobalt, Dissolved	ug/L	ND	1.0	10/17/12 11:54	
Copper, Dissolved	ug/L	ND	1.0	10/17/12 11:54	
Lead, Dissolved	ug/L	ND	1.0	10/17/12 11:54	
Manganese, Dissolved	ug/L	ND	1.0	10/17/12 11:54	
Nickel, Dissolved	ug/L	ND	1.0	10/17/12 11:54	
Selenium, Dissolved	ug/L	ND	1.0	10/17/12 11:54	
Zinc, Dissolved	ug/L	ND	10.0	10/17/12 11:54	

LABORATORY CONTROL SAMPLE: 1080300

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	39.0	97	85-115	
Cadmium, Dissolved	ug/L	40	40.0	100	85-115	
Chromium, Dissolved	ug/L	40	40.3	101	85-115	
Cobalt, Dissolved	ug/L	40	39.4	98	85-115	
Copper, Dissolved	ug/L	40	39.8	100	85-115	
Lead, Dissolved	ug/L	40	39.7	99	85-115	
Manganese, Dissolved	ug/L	40	39.9	100	85-115	
Nickel, Dissolved	ug/L	40	40.0	100	85-115	
Selenium, Dissolved	ug/L	40	39.9	100	85-115	
Zinc, Dissolved	ug/L	100	106	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1080301 1080302

Parameter	Units	60131225003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	ND	40	40	44.5	42.6	111	106	70-130	4	20	
Cadmium, Dissolved	ug/L	14.4	40	40	54.7	54.1	101	99	70-130	1	20	
Chromium, Dissolved	ug/L	ND	40	40	40.0	41.2	100	102	70-130	3	20	
Cobalt, Dissolved	ug/L	2.6J	40	40	42.2	43.1	99	101	70-130	2	20	
Copper, Dissolved	ug/L	4.0J	40	40	43.5	44.9	99	102	70-130	3	20	
Lead, Dissolved	ug/L	ND	40	40	39.8	40.1	99	100	70-130	1	20	
Manganese, Dissolved	ug/L	1790	40	40	1830	1820	91	68	70-130	1	20 M1	
Nickel, Dissolved	ug/L	3.5J	40	40	43.6	45.3	100	104	70-130	4	20	
Selenium, Dissolved	ug/L	ND	40	40	37.5	36.2	94	90	70-130	3	20	
Zinc, Dissolved	ug/L	2890	100	100	3060	3090	167	198	70-130	1	20 M1	

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QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131225

QC Batch: WET/37707

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60131225001, 60131225002, 60131225003

METHOD BLANK: 1080504

Matrix: Water

Associated Lab Samples: 60131225001, 60131225002, 60131225003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	10/17/12 07:59	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	10/17/12 07:59	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	10/17/12 07:59	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	10/17/12 07:59	

LABORATORY CONTROL SAMPLE: 1080505

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	476	95	90-110	

SAMPLE DUPLICATE: 1080506

Parameter	Units	60131225003 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	111	109	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	111	109	1	9	

SAMPLE DUPLICATE: 1080507

Parameter	Units	60131148002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	240	238	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	240	238	1	9	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Project No.: 60131225

QC Batch: WETA/22090 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60131225001, 60131225002, 60131225003

METHOD BLANK: 1080831 Matrix: Water

Associated Lab Samples: 60131225001, 60131225002, 60131225003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	10/17/12 11:08	
Chloride	mg/L	ND	1.0	10/17/12 11:08	
Fluoride	mg/L	ND	0.20	10/17/12 11:08	
Sulfate	mg/L	ND	1.0	10/17/12 11:08	

LABORATORY CONTROL SAMPLE: 1080832

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.0	100	90-110	
Chloride	mg/L	5	5.0	99	90-110	
Fluoride	mg/L	2.5	2.5	98	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1080833 1080834

Parameter	Units	60131225003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	ND	5	5	5.0	5.0	100	100	75-119	0	10	
Chloride	mg/L	1.6	5	5	6.1	6.1	91	91	64-118	0	12	
Fluoride	mg/L	2.2	2.5	2.5	4.6	4.6	98	98	75-110	0	10	
Sulfate	mg/L	642	500	500	1110	1100	93	91	61-119	1	10	

QUALIFIERS

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60131225

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

PASI-M Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131225

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60131225001	DR3A1210130900	EPA 200.7	MPRP/19994	EPA 200.7	ICP/16413
60131225002	DR3A1210140900	EPA 200.7	MPRP/19994	EPA 200.7	ICP/16413
60131225003	DR3A1210150900	EPA 200.7	MPRP/19994	EPA 200.7	ICP/16413
60131225001	DR3A1210130900	EPA 200.7	MPRP/19993	EPA 200.7	ICP/16412
60131225002	DR3A1210140900	EPA 200.7	MPRP/19993	EPA 200.7	ICP/16412
60131225003	DR3A1210150900	EPA 200.7	MPRP/19993	EPA 200.7	ICP/16412
60131225001	DR3A1210130900	EPA 200.8	MPRP/19997	EPA 200.8	ICPM/1727
60131225002	DR3A1210140900	EPA 200.8	MPRP/19997	EPA 200.8	ICPM/1727
60131225003	DR3A1210150900	EPA 200.8	MPRP/19997	EPA 200.8	ICPM/1727
60131225001	DR3A1210130900	EPA 200.8	ICPM/35773	EPA 200.8	ICPM/14147
60131225001	DR3A1210130900	EPA 200.8	MPRP/19996	EPA 200.8	ICPM/1726
60131225002	DR3A1210140900	EPA 200.8	ICPM/35773	EPA 200.8	ICPM/14147
60131225002	DR3A1210140900	EPA 200.8	MPRP/19996	EPA 200.8	ICPM/1726
60131225003	DR3A1210150900	EPA 200.8	ICPM/35773	EPA 200.8	ICPM/14147
60131225003	DR3A1210150900	EPA 200.8	MPRP/19996	EPA 200.8	ICPM/1726
60131225001	DR3A1210130900	SM 2320B	WET/37707		
60131225002	DR3A1210140900	SM 2320B	WET/37707		
60131225003	DR3A1210150900	SM 2320B	WET/37707		
60131225001	DR3A1210130900	EPA 300.0	WETA/22090		
60131225002	DR3A1210140900	EPA 300.0	WETA/22090		
60131225003	DR3A1210150900	EPA 300.0	WETA/22090		

Sample Condition Upon Receipt
ESI Tech Spec Client

WO#: 60131225



Client Name: BP AMEC Project #: _____

Optional

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Proj Due Date:

Trac 1Z733W872210056743 Pace Shipping Label Used? Yes ☒ No ☐

Proj Name:

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☒ 2PIL

Thermometer Used: T-191 T-194

Type of Ice: Wet Blue ☐ None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 2.7

Date and initials of person examining contents: 2/10/12

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7. <u>48 Hr</u>
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	12.
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	13.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Includes date/time/ID/analyses Matrix:	<u>NT</u>	15.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	16.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	17.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		18.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	19.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	20. List State:

Client Notification/ Resolution:

Copy COC to Client? Y / N

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: 1055 Start:

End: 1057 End:

Temp: _____ Temp:

Project Manager Review: Amw

Date: 10/10/12



Laboratory Management Program LAMP Chain of Custody Record

Page 1 of 1BP/ARC Project Name: Rico-Argentine Mine Site

Req Due Date (mm/dd/yy): _____

Rush TAT: Yes X No X

BP/ARC Facility No: _____

Lab Work Order Number: _____

Lab Name: Pace Analytical Laboratories, Inc.				BP/ARC Facility Address: Rico-Argentine Mine				Consultant/Contractor: AMEC E&I, Inc.																
Lab Address: 9608 Loiret Blvd., Lenexa, KS 66219				City, State, ZIP Code: Rico, Colorado				Consultant/Contractor Project No: SA11161302.200B																
Lab PM: Heather Wilson				Lead Regulatory Agency: U.S. EPA Region 8				Address: 10670 White Rock Road, Suite 100, Rancho Cordova, CA																
Lab Phone: (913) 563-1407				California Global ID No.: NA				Consultant/Contractor PM: Marc Lombardi																
Lab Shipping Acct: UPS # 733W87				Enfos Proposal No: D009D-0024 (WR 251660)				Phone: 916-636-3200																
Lab Bottle Order No: NA				Accounting Mode: Provision <u>X</u> OOC-BU <u> </u> OOC-RM <u> </u>				Email Report/EDD To: lynda.lombardi@amec.com																
Other Info: 517 Injection Treatability Study				Stage: 4-Execute Activity: Spend				Invoice To: BP/ARC <u>X</u> Contractor <u> </u>																
BP/ARC EBM: Anthony Brown				Matrix				No. Containers / Preservative				Requested Analyses				Report Type & QC Level								
EBM Phone: 714-228-6770																Standard <u>X</u>								
EBM Email: anthony.brown@bp.com																Full Data Package <u> </u>								
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	RUSH	Tot Metals-see notes (E200.7/200.8)	Dis Metals-see notes (E200.7/200.8)	Alkalinity-Total, HCO ₃ , CO ₃ , OH (SM2320B)	Sulfate (E300.0)	Chloride (E300.0)	Bromide (E300.0)	Fluoride (E300.0)	Dissolved Lithium (E200.7)	MS/MSD	HOLD	Comments	
	DR3A1210130900	10/13/12	0900	X	X	X	4	1	0	3	0	X	X	X	X	X	X	X	X	X	X	2BP3	5	Dissolved metals are field filtered. <u>W</u>
	DR3A1210140900	10/14/12	0900	X	X	X	4	1	0	3	0	X	X	X	X	X	X	X	X	X	X			<u>W</u>
	DR3A1210150900	10/15/12	0900	X	X	X	8	2	0	6	0	X	X	X	X	X	X	X	X	X	X	X		Metals are: Ca, Fe, K, Na, Mg (E200.7); As, Cd, Co, Cr, Cu, Mn, Ni, Pb, Se, Zn (E200.8)
48-hour turnaround on rushed samples																								
Sampler's Name: <u>ABBY CARLIER</u>				Relinquished By / Affiliation: <u>Wendy G. AMEC</u>				Date: <u>10/15/12</u>		Time: <u>1330</u>		Accepted By / Affiliation: <u>[Signature]</u>				Date: <u>10/16</u>		Time: <u>1000</u>						
Shipment Method: <u>UPS</u>				Ship Date: <u>10/15/12</u>																				
Shipment Tracking No: <u>733W87 221005 6743</u>																								
Special Instructions:																								
THIS LINE - LAB USE ONLY: Custody Seals In Place: <u>(X)</u> / No Temp Blank: <u>(X)</u> / No Cooler Temp on Receipt: <u>2-7</u> °F/C Trip Blank: Yes <u>(X)</u> / No MS/MSD Sample Submitted: <u>(X)</u> / No																								

November 02, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO-ARGENTINE MINE SITE
Pace Project No.: 60131323

Revised Report 11/2/12_rev.1
Added Al & Si to 60131323001

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on October 17, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60131323

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: Pace
Florida/NELAP Certification #: E87605
Georgia Certification #: 959
Hawaii Certification #Pace
Idaho Certification #: MN00064
Illinois Certification #: 200011
Kansas Certification #: E-10167
Louisiana Certification #: 03086
Louisiana Certification #: LA080009
Maine Certification #: 2007029
Maryland Certification #: 322
Michigan DEQ Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace

Montana Certification #: MT CERT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Dakota Certification #: R-036
North Dakota Certification #: R-036A
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Tennessee Certification #: 02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia/DCLS Certification #: 002521
Virginia/VELAP Certification #: 460163
Washington Certification #: C754
West Virginia Certification #: 382
Wisconsin Certification #: 999407970

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
A2LA Certification #: 2456.01
Arkansas Certification #: 12-019-0
Illinois Certification #: 002885
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-12-3
Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60131323

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60131323001	DR3A1210160900	Water	10/16/12 09:00	10/17/12 10:10

REPORT OF LABORATORY ANALYSIS

Page 3 of 23

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SAMPLE ANALYTE COUNT

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60131323

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60131323001	DR3A1210160900	EPA 200.7	SMW	7	PASI-K
		EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	10	PASI-K
		EPA 200.8	JGP	10	PASI-K
		EPA 200.8	RJS	1	PASI-M
		SM 2320B	DJR	4	PASI-K
		EPA 300.0	AJM	4	PASI-K

REPORT OF LABORATORY ANALYSIS

Page 4 of 23

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60131323

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: November 02, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20051

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60131323001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1081269)
 - Calcium
 - Potassium
- MSD (Lab ID: 1081270)
 - Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60131323

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: November 02, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20050

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60131323001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1081265)
 - Calcium, Dissolved
- MSD (Lab ID: 1081266)
 - Calcium, Dissolved

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20050

B: Analyte was detected in the associated method blank.

- DR3A1210160900 (Lab ID: 60131323001)
 - Calcium, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60131323

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 02, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20053

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60131323001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1081282)
 - Manganese
 - Zinc
- MSD (Lab ID: 1081283)
 - Manganese
 - Zinc

Additional Comments:

REPORT OF LABORATORY ANALYSIS

Page 7 of 23

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60131323

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 02, 2012

Analyte Comments:

QC Batch: MPRP/20053

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210160900 (Lab ID: 60131323001)

- Arsenic
- Selenium

REPORT OF LABORATORY ANALYSIS

Page 8 of 23

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60131323

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: November 02, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20052

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60131323001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1081274)
 - Manganese, Dissolved
 - Zinc, Dissolved

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20052

B: Analyte was detected in the associated method blank.

- DR3A1210160900 (Lab ID: 60131323001)
 - Zinc, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60131323

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: November 02, 2012

Analyte Comments:

QC Batch: MPRP/20052

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210160900 (Lab ID: 60131323001)
 - Arsenic, Dissolved
 - Chromium, Dissolved
 - Lead, Dissolved
 - Selenium, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60131323

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: November 02, 2012

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60131323

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: November 02, 2012

General Information:

1 sample was analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60131323

Sample: DR3A1210160900 Lab ID: 60131323001 Collected: 10/16/12 09:00 Received: 10/17/12 10:10 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	224	ug/L	75.0	25.0	1	10/17/12 16:15	10/18/12 13:36	7429-90-5	
Calcium	195000	ug/L	100	35.8	1	10/17/12 16:15	10/18/12 13:36	7440-70-2	M1
Iron	3710	ug/L	50.0	17.2	1	10/17/12 16:15	10/18/12 13:36	7439-89-6	
Magnesium	16900	ug/L	50.0	17.2	1	10/17/12 16:15	10/18/12 13:36	7439-95-4	
Potassium	64000	ug/L	500	64.1	1	10/17/12 16:15	10/18/12 13:36	7440-09-7	M1
Silicon	6620	ug/L	500	31.3	1	10/17/12 16:15	10/18/12 13:36	7440-21-3	
Sodium	10900	ug/L	500	40.1	1	10/17/12 16:15	10/18/12 13:36	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	53.6J	ug/L	75.0	25.0	1	10/17/12 16:15	10/18/12 12:54	7429-90-5	
Calcium, Dissolved	205000	ug/L	100	35.8	1	10/17/12 16:15	10/18/12 12:54	7440-70-2	B,D9, M1
Iron, Dissolved	413	ug/L	50.0	17.2	1	10/17/12 16:15	10/18/12 12:54	7439-89-6	
Magnesium, Dissolved	17800	ug/L	50.0	17.2	1	10/17/12 16:15	10/18/12 12:54	7439-95-4	D9
Potassium, Dissolved	67200	ug/L	500	64.1	1	10/17/12 16:15	10/18/12 12:54	7440-09-7	D9
Silicon, Dissolved	6810	ug/L	500	31.3	1	10/17/12 16:15	10/18/12 12:54	7440-21-3	D9
Sodium, Dissolved	11600	ug/L	500	40.1	1	10/17/12 16:15	10/18/12 12:54	7440-23-5	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	ND	ug/L	5.0	0.70	5	10/17/12 16:15	10/24/12 09:42	7440-38-2	D3
Cadmium	15.6	ug/L	2.5	0.48	5	10/17/12 16:15	10/24/12 09:42	7440-43-9	
Chromium	0.66J	ug/L	5.0	0.55	5	10/17/12 16:15	10/24/12 09:42	7440-47-3	
Cobalt	2.5J	ug/L	5.0	0.24	5	10/17/12 16:15	10/24/12 09:42	7440-48-4	
Copper	36.4	ug/L	5.0	2.2	5	10/17/12 16:15	10/24/12 09:42	7440-50-8	
Lead	1.6J	ug/L	5.0	0.26	5	10/17/12 16:15	10/24/12 09:42	7439-92-1	
Manganese	1760	ug/L	5.0	1.2	5	10/17/12 16:15	10/24/12 09:42	7439-96-5	M1
Nickel	3.0J	ug/L	5.0	1.8	5	10/17/12 16:15	10/24/12 09:42	7440-02-0	
Selenium	ND	ug/L	5.0	1.8	5	10/17/12 16:15	10/24/12 09:42	7782-49-2	D3
Zinc	2930	ug/L	50.0	8.0	5	10/17/12 16:15	10/24/12 09:42	7440-66-6	M1
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8									
Lithium, Dissolved	172	ug/L	0.50	0.11	1	10/20/12 11:49	10/21/12 10:44	7439-93-2	
Arsenic, Dissolved	ND	ug/L	5.0	0.70	5	10/17/12 16:15	10/24/12 10:09	7440-38-2	D3
Cadmium, Dissolved	15.2	ug/L	2.5	0.48	5	10/17/12 16:15	10/24/12 10:09	7440-43-9	
Chromium, Dissolved	ND	ug/L	5.0	0.55	5	10/17/12 16:15	10/24/12 10:09	7440-47-3	D3
Cobalt, Dissolved	2.8J	ug/L	5.0	0.24	5	10/17/12 16:15	10/24/12 10:09	7440-48-4	
Copper, Dissolved	4.4J	ug/L	5.0	2.2	5	10/17/12 16:15	10/24/12 10:09	7440-50-8	
Lead, Dissolved	ND	ug/L	5.0	0.26	5	10/17/12 16:15	10/24/12 10:09	7439-92-1	D3
Manganese, Dissolved	1850	ug/L	5.0	1.2	5	10/17/12 16:15	10/24/12 10:09	7439-96-5	D9,M1
Nickel, Dissolved	3.0J	ug/L	5.0	1.8	5	10/17/12 16:15	10/24/12 10:09	7440-02-0	
Selenium, Dissolved	ND	ug/L	5.0	1.8	5	10/17/12 16:15	10/24/12 10:09	7782-49-2	D3
Zinc, Dissolved	2930	ug/L	50.0	8.0	5	10/17/12 16:15	10/24/12 10:09	7440-66-6	B,D9, M1
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	109	mg/L	20.0	1.2	1		10/18/12 08:02		

Date: 11/02/2012 04:56 PM

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60131323

Sample: DR3A1210160900		Lab ID: 60131323001		Collected: 10/16/12 09:00		Received: 10/17/12 10:10		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/18/12 08:02		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/18/12 08:02		
Alkalinity, Total as CaCO ₃	109	mg/L	20.0	1.2	1		10/18/12 08:02		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.078	1		10/17/12 21:45	24959-67-9	
Chloride	1.5	mg/L	1.0	0.50	1		10/17/12 21:45	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/17/12 21:45	16984-48-8	
Sulfate	645	mg/L	100	12.0	100		10/17/12 22:03	14808-79-8	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60131323

QC Batch: ICPM/35860

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60131323001

METHOD BLANK: 1314484

Matrix: Water

Associated Lab Samples: 60131323001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lithium, Dissolved	ug/L	ND	0.50	10/21/12 10:34	

LABORATORY CONTROL SAMPLE: 1314485

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lithium, Dissolved	ug/L	80	83.2	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1314486 1314487

Parameter	Units	60131323001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lithium, Dissolved	ug/L	172	80	80	260	265	110	117	70-130	2	20	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60131323

QC Batch: MPRP/20051

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60131323001

METHOD BLANK: 1081267

Matrix: Water

Associated Lab Samples: 60131323001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	10/18/12 13:29	
Calcium	ug/L	ND	100	10/18/12 13:29	
Iron	ug/L	ND	50.0	10/18/12 13:29	
Magnesium	ug/L	ND	50.0	10/18/12 13:29	
Potassium	ug/L	ND	500	10/18/12 13:29	
Silicon	ug/L	ND	500	10/18/12 13:29	
Sodium	ug/L	ND	500	10/18/12 13:29	

LABORATORY CONTROL SAMPLE: 1081268

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	9710	97	85-115	
Calcium	ug/L	10000	9430	94	85-115	
Iron	ug/L	10000	9470	95	85-115	
Magnesium	ug/L	10000	9300	93	85-115	
Potassium	ug/L	10000	9830	98	85-115	
Silicon	ug/L	5000	4610	92	85-115	
Sodium	ug/L	10000	10400	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1081269

1081270

Parameter	Units	60131323001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	224	10000	10000	10000	9800	98	96	70-130	2	8	
Calcium	ug/L	195000	10000	10000	215000	209000	202	144	70-130	3	9 M1	
Iron	ug/L	3710	10000	10000	13300	13000	96	92	70-130	2	10	
Magnesium	ug/L	16900	10000	10000	27000	26400	102	96	70-130	2	9	
Potassium	ug/L	64000	10000	10000	78200	75500	142	115	70-130	4	7 M1	
Silicon	ug/L	6620	5000	5000	11800	11500	104	98	70-130	3	5	
Sodium	ug/L	10900	10000	10000	22200	21500	113	106	70-130	3	8	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60131323

QC Batch: MPRP/20050

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60131323001

METHOD BLANK: 1081263

Matrix: Water

Associated Lab Samples: 60131323001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	10/18/12 12:47	
Calcium, Dissolved	ug/L	39.0J	100	10/18/12 12:47	
Iron, Dissolved	ug/L	ND	50.0	10/18/12 12:47	
Magnesium, Dissolved	ug/L	ND	50.0	10/18/12 12:47	
Potassium, Dissolved	ug/L	ND	500	10/18/12 12:47	
Silicon, Dissolved	ug/L	ND	500	10/18/12 12:47	
Sodium, Dissolved	ug/L	ND	500	10/18/12 12:47	

LABORATORY CONTROL SAMPLE: 1081264

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	9680	97	85-115	
Calcium, Dissolved	ug/L	10000	9380	94	85-115	
Iron, Dissolved	ug/L	10000	9390	94	85-115	
Magnesium, Dissolved	ug/L	10000	9200	92	85-115	
Potassium, Dissolved	ug/L	10000	9650	96	85-115	
Silicon, Dissolved	ug/L	5000	4610	92	85-115	
Sodium, Dissolved	ug/L	10000	10300	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1081265

1081266

Parameter	Units	60131323001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	53.6J	10000	10000	9680	9590	96	95	70-130	1	8	
Calcium, Dissolved	ug/L	205000	10000	10000	212000	212000	64	67	70-130	0	9 M1	
Iron, Dissolved	ug/L	413	10000	10000	9780	9630	94	92	70-130	2	10	
Magnesium, Dissolved	ug/L	17800	10000	10000	26500	26500	87	88	70-130	0	9	
Potassium, Dissolved	ug/L	67200	10000	10000	76400	76200	91	89	70-130	0	7	
Silicon, Dissolved	ug/L	6810	5000	5000	11600	11500	95	94	70-130	1	5	
Sodium, Dissolved	ug/L	11600	10000	10000	21800	21600	102	100	70-130	1	8	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60131323

QC Batch:	MPRP/20053	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET
Associated Lab Samples:	60131323001		

METHOD BLANK: 1081280 Matrix: Water

Associated Lab Samples: 60131323001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	10/24/12 09:35	
Cadmium	ug/L	ND	0.50	10/24/12 09:35	
Chromium	ug/L	ND	1.0	10/24/12 09:35	
Cobalt	ug/L	ND	1.0	10/24/12 09:35	
Copper	ug/L	ND	1.0	10/24/12 09:35	
Lead	ug/L	ND	1.0	10/24/12 09:35	
Manganese	ug/L	ND	1.0	10/24/12 09:35	
Nickel	ug/L	ND	1.0	10/24/12 09:35	
Selenium	ug/L	ND	1.0	10/24/12 09:35	
Zinc	ug/L	ND	10.0	10/24/12 09:35	

LABORATORY CONTROL SAMPLE: 1081281

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	40.3	101	85-115	
Cadmium	ug/L	40	39.5	99	85-115	
Chromium	ug/L	40	40.8	102	85-115	
Cobalt	ug/L	40	40.0	100	85-115	
Copper	ug/L	40	40.7	102	85-115	
Lead	ug/L	40	39.5	99	85-115	
Manganese	ug/L	40	40.2	101	85-115	
Nickel	ug/L	40	40.2	100	85-115	
Selenium	ug/L	40	39.6	99	85-115	
Zinc	ug/L	100	107	107	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1081282 1081283

Parameter	Units	60131323001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	ND	40	40	41.8	41.7	104	104	70-130	0	20	
Cadmium	ug/L	15.6	40	40	57.4	57.0	105	104	70-130	1	20	
Chromium	ug/L	0.66J	40	40	41.1	40.7	101	100	70-130	1	20	
Cobalt	ug/L	2.5J	40	40	41.7	41.3	98	97	70-130	1	20	
Copper	ug/L	36.4	40	40	77.6	76.4	103	100	70-130	1	20	
Lead	ug/L	1.6J	40	40	41.6	40.7	100	98	70-130	2	20	
Manganese	ug/L	1760	40	40	1840	1840	189	176	70-130	0	20 M1	
Nickel	ug/L	3.0J	40	40	42.2	44.0	98	102	70-130	4	20	
Selenium	ug/L	ND	40	40	39.9	40.3	100	101	70-130	1	20	
Zinc	ug/L	2930	100	100	3090	3080	164	148	70-130	1	20 M1	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60131323

QC Batch: MPRP/20052

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60131323001

METHOD BLANK: 1081271

Matrix: Water

Associated Lab Samples: 60131323001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	10/24/12 10:03	
Cadmium, Dissolved	ug/L	ND	0.50	10/24/12 10:03	
Chromium, Dissolved	ug/L	ND	1.0	10/24/12 10:03	
Cobalt, Dissolved	ug/L	ND	1.0	10/24/12 10:03	
Copper, Dissolved	ug/L	ND	1.0	10/24/12 10:03	
Lead, Dissolved	ug/L	ND	1.0	10/24/12 10:03	
Manganese, Dissolved	ug/L	ND	1.0	10/24/12 10:03	
Nickel, Dissolved	ug/L	ND	1.0	10/24/12 10:03	
Selenium, Dissolved	ug/L	ND	1.0	10/24/12 10:03	
Zinc, Dissolved	ug/L	2.4J	10.0	10/24/12 10:03	

LABORATORY CONTROL SAMPLE: 1081272

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	41.6	104	85-115	
Cadmium, Dissolved	ug/L	40	41.6	104	85-115	
Chromium, Dissolved	ug/L	40	41.5	104	85-115	
Cobalt, Dissolved	ug/L	40	39.8	99	85-115	
Copper, Dissolved	ug/L	40	41.0	102	85-115	
Lead, Dissolved	ug/L	40	40.2	100	85-115	
Manganese, Dissolved	ug/L	40	41.0	103	85-115	
Nickel, Dissolved	ug/L	40	41.0	102	85-115	
Selenium, Dissolved	ug/L	40	43.1	108	85-115	
Zinc, Dissolved	ug/L	100	113	113	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1081273 1081274

Parameter	Units	60131323001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	ND	40	40	41.8	40.9	104	101	70-130	2	20	
Cadmium, Dissolved	ug/L	15.2	40	40	56.2	54.8	103	99	70-130	3	20	
Chromium, Dissolved	ug/L	ND	40	40	40.4	40.1	100	100	70-130	1	20	
Cobalt, Dissolved	ug/L	2.8J	40	40	42.2	41.5	98	97	70-130	2	20	
Copper, Dissolved	ug/L	4.4J	40	40	43.5	41.9	98	94	70-130	4	20	
Lead, Dissolved	ug/L	ND	40	40	39.7	39.2	99	98	70-130	1	20	
Manganese, Dissolved	ug/L	1850	40	40	1890	1830	94	-54	70-130	3	20 M1	
Nickel, Dissolved	ug/L	3.0J	40	40	41.8	41.0	97	95	70-130	2	20	
Selenium, Dissolved	ug/L	ND	40	40	39.7	39.2	99	98	70-130	1	20	
Zinc, Dissolved	ug/L	2930	100	100	3050	2950	119	18	70-130	3	20 M1	

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60131323

QC Batch: WET/37724

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60131323001

METHOD BLANK: 1081600

Matrix: Water

Associated Lab Samples: 60131323001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	10/18/12 07:52	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	10/18/12 07:52	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	10/18/12 07:52	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	10/18/12 07:52	

LABORATORY CONTROL SAMPLE: 1081601

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	490	98	90-110	

SAMPLE DUPLICATE: 1081602

Parameter	Units	60131323001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	109	110	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	109	110	1	9	

SAMPLE DUPLICATE: 1081603

Parameter	Units	60131194004 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	546	552	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	546	552	1	9	

QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Project No.: 60131323

QC Batch: WETA/22090

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60131323001

METHOD BLANK: 1080831

Matrix: Water

Associated Lab Samples: 60131323001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	10/17/12 11:08	
Chloride	mg/L	ND	1.0	10/17/12 11:08	
Fluoride	mg/L	ND	0.20	10/17/12 11:08	
Sulfate	mg/L	ND	1.0	10/17/12 11:08	

LABORATORY CONTROL SAMPLE: 1080832

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.0	100	90-110	
Chloride	mg/L	5	5.0	99	90-110	
Fluoride	mg/L	2.5	2.5	98	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1080833

1080834

Parameter	Units	60131225003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	ND	5	5	5.0	5.0	100	100	75-119	0	10	
Chloride	mg/L	1.6	5	5	6.1	6.1	91	91	64-118	0	12	
Fluoride	mg/L	2.2	2.5	2.5	4.6	4.6	98	98	75-110	0	10	
Sulfate	mg/L	642	500	500	1110	1100	93	91	61-119	1	10	

QUALIFIERS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60131323

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

PASI-M Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60131323

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60131323001	DR3A1210160900	EPA 200.7	MPRP/20051	EPA 200.7	ICP/16422
60131323001	DR3A1210160900	EPA 200.7	MPRP/20050	EPA 200.7	ICP/16423
60131323001	DR3A1210160900	EPA 200.8	MPRP/20053	EPA 200.8	ICPM/1732
60131323001	DR3A1210160900	EPA 200.8	ICPM/35860	EPA 200.8	ICPM/14171
60131323001	DR3A1210160900	EPA 200.8	MPRP/20052	EPA 200.8	ICPM/1731
60131323001	DR3A1210160900	SM 2320B	WET/37724		
60131323001	DR3A1210160900	EPA 300.0	WETA/22090		



Sample Condition Upon Receipt
ESI Tech Spec Client

WO#: 60131323



60131323

Client Name: BP-AMEC

Project #: _____

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 1Z 733 W9722 1005 6749 Pace Shipping Label Used? Yes ☐ No ☒

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☒ EPLC

Thermometer Used: T-191 T-194

Type of Ice: Wet Blue None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 3.1

Date and initials of person examining contents: 10/17

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7. <u>RUSH</u>
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. <u>10/17</u>
Filtered volume received for dissolved tests?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
Includes date/time/ID/analyses	Matrix: <u>WT</u>	13.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:

Client Notification/ Resolution:

Copy COC to Client? Y ☒ N ☐

Field Data Required? Y ☐ N ☐

Person Contacted: _____

Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [Signature]

Date: 10/17/12

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: <u>14:57</u>	Start:
End: <u>15:17</u>	End:
Temp:	Temp:



Laboratory Management Program LAMP Chain of Custody Record

Page 1 of 1BP/ARC Project Name: Rico-Argentine Mine SiteReq Due Date (mm/dd/yy): _____ Rush TAT: Yes X No X

BP/ARC Facility No: _____

Lab Work Order Number: _____

Lab Name: Pace Analytical Laboratories, Inc.				BP/ARC Facility Address: Rico-Argentine Mine				Consultant/Contractor: AMEC E&I, Inc.																
Lab Address: 9608 Loiret Blvd., Lenexa, KS 66219				City, State, ZIP Code: Rico, Colorado				Consultant/Contractor Project No: SA11161302.200B																
Lab PM: Heather Wilson				Lead Regulatory Agency: U.S. EPA Region 8				Address: 10670 White Rock Road, Suite 100, Rancho Cordova, CA																
Lab Phone: (913) 563-1407				California Global ID No.: NA				Consultant/Contractor PM: Marc Lombardi																
Lab Shipping Accnt: UPS # 733W87				Enfos Proposal No: D009D-0024 (WR 251660)				Phone: 916-636-3200																
Lab Bottle Order No: NA				Accounting Mode: Provision <u>X</u> OOC-BU <u> </u> OOC-RM <u> </u>				Email Report/EDD To: lynda.lombardi@amec.com																
Other Info: 517 Injection Treatability Study				Stage: 4-Execute Activity: Spend				Invoice To: BP/ARC <u>X</u> Contractor <u> </u>																
BP/ARC EBM: Anthony Brown				Matrix				No. Containers / Preservative				Requested Analyses				Report Type & QC Level								
EBM Phone: 714-228-6770																Standard <u>X</u>								
EBM Email: anthony.brown@bp.com																Full Data Package <u> </u>								
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	RUSH	Tot Metals-see notes (E200.7/200.8)	Dis Metals-see notes (E200.7/200.8)	Alkalinity-Total, HCO ₃ , CO ₃ , OH (SM2320B)	Sulfate (E300.0)	Chloride (E300.0)	Bromide (E300.0)	Fluoride (E300.0)	Dissolved Lithium (E200.7)	MS/MSD	HOLD	Comments	
	DR3A1210160900	10/16/12	0900	X			4	1	0	3	0	X	X	X	X	X	X	X	X	X	X			Dissolved metals are field filtered. 001
<div style="text-align: center;">BL 10/16/12</div>																							Metals are: Ca, Fe, K, Na, Mg	
																							(E200.7); As, Cd, Co, Cr, Cu, Mn, Ni,	
																							Pb, Se, Zn (E200.8)	
																							48-hour turnaround on rushed samples	
Sampler's Name: <u>Andy Carter</u>				Relinquished By / Affiliation				Date	Time	Accepted By / Affiliation				Date	Time									
Sampler's Company: <u>AMEC</u>				<u>Andy Carter / AMEC</u>				10/30	10/16/12	<u> </u> <u> </u>				10/17	1040									
Shipment Method: <u>UPS</u> Ship Date: <u>10/16/12</u>															1010									
Shipment Tracking No: <u>1Z 733 W87 22 1005 6789</u>																								
Special Instructions:																								
THIS LINE - LAB USE ONLY: Custody Seals In Place: <u>(X)</u> / No Temp Blank: Yes <u>(X)</u> / No Cooler Temp on Receipt: <u>3.1</u> °F/C Trip Blank: Yes <u>(X)</u> / No MS/MSD Sample Submitted: Yes <u>(X)</u> / No																								

November 02, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60131530

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on October 19, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131530

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131530

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60131530001	BLAINE0BF121016	Water	10/16/12 14:50	10/19/12 10:30
60131530002	BLAINE1BF121016	Water	10/16/12 14:55	10/19/12 10:30
60131530003	517INJECT121016	Water	10/16/12 16:00	10/19/12 10:30
60131530004	517SHAFT465121017	Water	10/17/12 09:15	10/19/12 10:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131530

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60131530001	BLAINE0BF121016	EPA 200.7	JGP	7
		EPA 200.7	JGP	8
		EPA 200.8	JGP	10
		EPA 200.8	JGP	10
		SM 2320B	DJR	4
		EPA 300.0	AJM	4
60131530002	BLAINE1BF121016	EPA 200.7	JGP	7
		EPA 200.7	JGP	8
		EPA 200.8	JGP	10
		EPA 200.8	JGP	10
		SM 2320B	DJR	4
		EPA 300.0	AJM	4
60131530003	517INJECT121016	EPA 200.7	JGP	5
		EPA 200.7	JGP	5
		EPA 200.8	JGP	10
		EPA 200.8	JGP	10
		SM 2320B	DJR	4
		EPA 300.0	AJM	4
60131530004	517SHAFT465121017	EPA 200.7	JGP	5
		EPA 200.7	SMW	6
		EPA 200.8	JGP	10
		EPA 200.8	JGP	10
		SM 2320B	DJR	4
		EPA 300.0	AJM	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131530

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: November 02, 2012

General Information:

4 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20081

B: Analyte was detected in the associated method blank.

- 517INJECT121016 (Lab ID: 60131530003)
 - Potassium
 - Sodium
- 517SHAFT465121017 (Lab ID: 60131530004)
 - Potassium
 - Sodium
- BLAINE0BF121016 (Lab ID: 60131530001)
 - Sodium
- BLAINE1BF121016 (Lab ID: 60131530002)
 - Potassium
 - Sodium

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- BLAINE0BF121016 (Lab ID: 60131530001)
 - Potassium

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60131530

Method: EPA 200.7
Description: 200.7 Metals, Dissolved
Client: BP AMEC
Date: November 02, 2012

General Information:

4 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20080

B: Analyte was detected in the associated method blank.

- 517INJECT121016 (Lab ID: 60131530003)
 - Potassium, Dissolved
- 517SHAFT465121017 (Lab ID: 60131530004)
 - Potassium, Dissolved
- BLAINE0BF121016 (Lab ID: 60131530001)
 - Potassium, Dissolved
- BLAINE1BF121016 (Lab ID: 60131530002)
 - Potassium, Dissolved

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- BLAINE0BF121016 (Lab ID: 60131530001)
 - Potassium, Dissolved

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131530

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 02, 2012

General Information:

4 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20083

B: Analyte was detected in the associated method blank.

- 517INJECT121016 (Lab ID: 60131530003)
 - Manganese
 - Zinc
- 517SHAFT465121017 (Lab ID: 60131530004)
 - Manganese
 - Zinc
- BLAINE0BF121016 (Lab ID: 60131530001)
 - Manganese
 - Zinc
- BLAINE1BF121016 (Lab ID: 60131530002)
 - Manganese

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131530

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 02, 2012

Analyte Comments:

QC Batch: MPRP/20083

B: Analyte was detected in the associated method blank.

- BLAINE1BF121016 (Lab ID: 60131530002)
 - Zinc

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- 517INJECT121016 (Lab ID: 60131530003)
 - Arsenic
 - Cadmium
 - Cobalt
 - Nickel
- 517SHAFT465121017 (Lab ID: 60131530004)
 - Arsenic
 - Selenium
- BLAINE1BF121016 (Lab ID: 60131530002)
 - Selenium

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131530

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: November 02, 2012

General Information:

4 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20082

B: Analyte was detected in the associated method blank.

- 517INJECT121016 (Lab ID: 60131530003)
 - Zinc, Dissolved
- 517SHAFT465121017 (Lab ID: 60131530004)
 - Zinc, Dissolved
- BLAINE0BF121016 (Lab ID: 60131530001)
 - Zinc, Dissolved
- BLAINE1BF121016 (Lab ID: 60131530002)
 - Zinc, Dissolved

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- 517INJECT121016 (Lab ID: 60131530003)
 - Arsenic, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131530

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: November 02, 2012

Analyte Comments:

QC Batch: MPRP/20082

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- 517INJECT121016 (Lab ID: 60131530003)
 - Cadmium, Dissolved
 - Cobalt, Dissolved
 - Copper, Dissolved
 - Nickel, Dissolved
- 517SHAFT465121017 (Lab ID: 60131530004)
 - Arsenic, Dissolved
 - Chromium, Dissolved
 - Lead, Dissolved
 - Selenium, Dissolved
- BLAINE1BF121016 (Lab ID: 60131530002)
 - Selenium, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131530

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: November 02, 2012

General Information:

4 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131530

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: November 02, 2012

General Information:

3 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131530

Sample: BLAINE0BF121016 Lab ID: 60131530001 Collected: 10/16/12 14:50 Received: 10/19/12 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	233000	ug/L	750	250	10	10/19/12 17:15	10/22/12 16:12	7429-90-5	
Calcium	381000	ug/L	1000	358	10	10/19/12 17:15	10/22/12 16:12	7440-70-2	M6
Iron	2740000	ug/L	500	172	10	10/19/12 17:15	10/22/12 16:12	7439-89-6	M6
Magnesium	235000	ug/L	500	172	10	10/19/12 17:15	10/22/12 16:12	7439-95-4	M6
Potassium	ND	ug/L	5000	641	10	10/19/12 17:15	10/22/12 16:12	7440-09-7	D3
Silicon	50200	ug/L	5000	313	10	10/19/12 17:15	10/22/12 16:12	7440-21-3	
Sodium	21700	ug/L	5000	401	10	10/19/12 17:15	10/22/12 16:12	7440-23-5	B
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	254000	ug/L	750	250	10	10/19/12 17:15	10/22/12 16:53	7429-90-5	D9
Calcium, Dissolved	409000	ug/L	1000	358	10	10/19/12 17:15	10/22/12 16:53	7440-70-2	D9,M6
Iron, Dissolved	2880000	ug/L	500	172	10	10/19/12 17:15	10/22/12 16:53	7439-89-6	D9,M6
Lithium, Dissolved	362	ug/L	100	36.6	10	10/19/12 17:15	10/22/12 16:53	7439-93-2	
Magnesium, Dissolved	258000	ug/L	500	172	10	10/19/12 17:15	10/22/12 16:53	7439-95-4	D9,M6
Potassium, Dissolved	1330J	ug/L	5000	641	10	10/19/12 17:15	10/22/12 16:53	7440-09-7	B,D3
Silicon, Dissolved	52500	ug/L	5000	313	10	10/19/12 17:15	10/22/12 16:53	7440-21-3	D9
Sodium, Dissolved	23700	ug/L	5000	401	10	10/19/12 17:15	10/22/12 16:53	7440-23-5	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	3620	ug/L	100	14.0	100	10/19/12 17:15	10/24/12 10:54	7440-38-2	M6
Cadmium	3390	ug/L	50.0	9.7	100	10/19/12 17:15	10/24/12 10:54	7440-43-9	M6
Chromium	240	ug/L	100	11.0	100	10/19/12 17:15	10/24/12 10:54	7440-47-3	
Cobalt	452	ug/L	100	4.8	100	10/19/12 17:15	10/24/12 10:54	7440-48-4	
Copper	34600	ug/L	100	45.0	100	10/19/12 17:15	10/24/12 10:54	7440-50-8	M6
Lead	852	ug/L	100	5.1	100	10/19/12 17:15	10/24/12 10:54	7439-92-1	
Manganese	220000	ug/L	100	23.0	100	10/19/12 17:15	10/24/12 10:54	7439-96-5	B,M6
Nickel	530	ug/L	100	35.0	100	10/19/12 17:15	10/24/12 10:54	7440-02-0	
Selenium	49.5J	ug/L	100	35.0	100	10/19/12 17:15	10/24/12 10:54	7782-49-2	
Zinc	575000	ug/L	1000	160	100	10/19/12 17:15	10/24/12 10:54	7440-66-6	B,M6
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	3460	ug/L	100	14.0	100	10/19/12 17:15	10/24/12 11:34	7440-38-2	M6
Cadmium, Dissolved	3350	ug/L	50.0	9.7	100	10/19/12 17:15	10/24/12 11:34	7440-43-9	
Chromium, Dissolved	232	ug/L	100	11.0	100	10/19/12 17:15	10/24/12 11:34	7440-47-3	
Cobalt, Dissolved	433	ug/L	100	4.8	100	10/19/12 17:15	10/24/12 11:34	7440-48-4	
Copper, Dissolved	32700	ug/L	100	45.0	100	10/19/12 17:15	10/24/12 11:34	7440-50-8	M6
Lead, Dissolved	829	ug/L	100	5.1	100	10/19/12 17:15	10/24/12 11:34	7439-92-1	M6
Manganese, Dissolved	214000	ug/L	100	23.0	100	10/19/12 17:15	10/24/12 11:34	7439-96-5	M6
Nickel, Dissolved	512	ug/L	100	35.0	100	10/19/12 17:15	10/24/12 11:34	7440-02-0	
Selenium, Dissolved	45.1J	ug/L	100	35.0	100	10/19/12 17:15	10/24/12 11:34	7782-49-2	
Zinc, Dissolved	555000	ug/L	1000	160	100	10/19/12 17:15	10/24/12 11:34	7440-66-6	B,M6
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/19/12 13:20		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/19/12 13:20		

Date: 11/02/2012 05:00 PM

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ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131530

Sample: BLAINE0BF121016 Lab ID: 60131530001 Collected: 10/16/12 14:50 Received: 10/19/12 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/19/12 13:20		
Alkalinity, Total as CaCO ₃	ND	mg/L	20.0	1.2	1		10/19/12 13:20		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	ND	mg/L	1.0	0.078	1		10/19/12 17:30	24959-67-9	
Chloride	2.2	mg/L	1.0	0.50	1		10/19/12 17:30	16887-00-6	
Fluoride	42.8	mg/L	2.0	0.11	10		10/19/12 17:48	16984-48-8	
Sulfate	27700	mg/L	2000	240	2000		10/20/12 02:00	14808-79-8	

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131530

Sample: BLAINE1BF121016 Lab ID: 60131530002 Collected: 10/16/12 14:55 Received: 10/19/12 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	251000	ug/L	750	250	10	10/19/12 17:15	10/22/12 16:26	7429-90-5	
Calcium	369000	ug/L	1000	358	10	10/19/12 17:15	10/22/12 16:26	7440-70-2	
Iron	1550000	ug/L	500	172	10	10/19/12 17:15	10/22/12 16:26	7439-89-6	
Magnesium	223000	ug/L	500	172	10	10/19/12 17:15	10/22/12 16:26	7439-95-4	
Potassium	6580	ug/L	5000	641	10	10/19/12 17:15	10/22/12 16:26	7440-09-7	B
Silicon	49000	ug/L	5000	313	10	10/19/12 17:15	10/22/12 16:26	7440-21-3	
Sodium	5500	ug/L	5000	401	10	10/19/12 17:15	10/22/12 16:26	7440-23-5	B
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	253000	ug/L	750	250	10	10/19/12 17:15	10/22/12 17:07	7429-90-5	D9
Calcium, Dissolved	370000	ug/L	1000	358	10	10/19/12 17:15	10/22/12 17:07	7440-70-2	D9
Iron, Dissolved	1520000	ug/L	500	172	10	10/19/12 17:15	10/22/12 17:07	7439-89-6	
Lithium, Dissolved	262	ug/L	100	36.6	10	10/19/12 17:15	10/22/12 17:07	7439-93-2	
Magnesium, Dissolved	221000	ug/L	500	172	10	10/19/12 17:15	10/22/12 17:07	7439-95-4	
Potassium, Dissolved	7350	ug/L	5000	641	10	10/19/12 17:15	10/22/12 17:07	7440-09-7	B,D9
Silicon, Dissolved	47900	ug/L	5000	313	10	10/19/12 17:15	10/22/12 17:07	7440-21-3	
Sodium, Dissolved	5330	ug/L	5000	401	10	10/19/12 17:15	10/22/12 17:07	7440-23-5	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	44.3J	ug/L	100	14.0	100	10/19/12 17:15	10/24/12 11:07	7440-38-2	
Cadmium	1420	ug/L	50.0	9.7	100	10/19/12 17:15	10/24/12 11:07	7440-43-9	
Chromium	230	ug/L	100	11.0	100	10/19/12 17:15	10/24/12 11:07	7440-47-3	
Cobalt	236	ug/L	100	4.8	100	10/19/12 17:15	10/24/12 11:07	7440-48-4	
Copper	25700	ug/L	100	45.0	100	10/19/12 17:15	10/24/12 11:07	7440-50-8	
Lead	226	ug/L	100	5.1	100	10/19/12 17:15	10/24/12 11:07	7439-92-1	
Manganese	114000	ug/L	100	23.0	100	10/19/12 17:15	10/24/12 11:07	7439-96-5	B
Nickel	426	ug/L	100	35.0	100	10/19/12 17:15	10/24/12 11:07	7440-02-0	
Selenium	ND	ug/L	100	35.0	100	10/19/12 17:15	10/24/12 11:07	7782-49-2	D3
Zinc	216000	ug/L	1000	160	100	10/19/12 17:15	10/24/12 11:07	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	39.5J	ug/L	100	14.0	100	10/19/12 17:15	10/24/12 11:48	7440-38-2	
Cadmium, Dissolved	1420	ug/L	50.0	9.7	100	10/19/12 17:15	10/24/12 11:48	7440-43-9	D9
Chromium, Dissolved	228	ug/L	100	11.0	100	10/19/12 17:15	10/24/12 11:48	7440-47-3	
Cobalt, Dissolved	239	ug/L	100	4.8	100	10/19/12 17:15	10/24/12 11:48	7440-48-4	D9
Copper, Dissolved	25500	ug/L	100	45.0	100	10/19/12 17:15	10/24/12 11:48	7440-50-8	
Lead, Dissolved	225	ug/L	100	5.1	100	10/19/12 17:15	10/24/12 11:48	7439-92-1	
Manganese, Dissolved	115000	ug/L	100	23.0	100	10/19/12 17:15	10/24/12 11:48	7439-96-5	D9
Nickel, Dissolved	427	ug/L	100	35.0	100	10/19/12 17:15	10/24/12 11:48	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	100	35.0	100	10/19/12 17:15	10/24/12 11:48	7782-49-2	D3
Zinc, Dissolved	217000	ug/L	1000	160	100	10/19/12 17:15	10/24/12 11:48	7440-66-6	B,D9
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/19/12 13:24		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/19/12 13:24		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131530

Sample: BLAINE1BF121016		Lab ID: 60131530002		Collected: 10/16/12 14:55		Received: 10/19/12 10:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/19/12 13:24		
Alkalinity, Total as CaCO ₃	ND	mg/L	20.0	1.2	1		10/19/12 13:24		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	1.2	mg/L	1.0	0.078	1		10/19/12 19:19	24959-67-9	
Chloride	4.1	mg/L	1.0	0.50	1		10/19/12 19:19	16887-00-6	
Fluoride	60.2	mg/L	2.0	0.11	10		10/19/12 19:38	16984-48-8	
Sulfate	26100	mg/L	2000	240	2000		10/20/12 02:18	14808-79-8	

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131530

Sample: 517INJECT121016 Lab ID: 60131530003 Collected: 10/16/12 16:00 Received: 10/19/12 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	24000	ug/L	10000	3580	100	10/19/12 17:15	10/22/12 16:30	7440-70-2	
Iron	3390J	ug/L	5000	1720	100	10/19/12 17:15	10/22/12 16:30	7439-89-6	
Magnesium	3390J	ug/L	5000	1720	100	10/19/12 17:15	10/22/12 16:30	7439-95-4	
Potassium	158000000	ug/L	250000	32000	500	10/19/12 17:15	10/22/12 17:28	7440-09-7	B
Sodium	588000	ug/L	50000	4010	100	10/19/12 17:15	10/22/12 16:30	7440-23-5	B
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	17800	ug/L	10000	3580	100	10/19/12 17:15	10/22/12 17:11	7440-70-2	
Iron, Dissolved	2490J	ug/L	5000	1720	100	10/19/12 17:15	10/22/12 17:11	7439-89-6	
Magnesium, Dissolved	3030J	ug/L	5000	1720	100	10/19/12 17:15	10/22/12 17:11	7439-95-4	
Potassium, Dissolved	128000000	ug/L	250000	32000	500	10/19/12 17:15	10/22/12 17:31	7440-09-7	B
Sodium, Dissolved	472000	ug/L	50000	4010	100	10/19/12 17:15	10/22/12 17:11	7440-23-5	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	ND	ug/L	100	14.0	100	10/19/12 17:15	10/24/12 11:11	7440-38-2	D3
Cadmium	ND	ug/L	50.0	9.7	100	10/19/12 17:15	10/24/12 11:11	7440-43-9	D3
Chromium	14.7J	ug/L	100	11.0	100	10/19/12 17:15	10/24/12 11:11	7440-47-3	
Cobalt	ND	ug/L	100	4.8	100	10/19/12 17:15	10/24/12 11:11	7440-48-4	D3
Copper	47.2J	ug/L	100	45.0	100	10/19/12 17:15	10/24/12 11:11	7440-50-8	
Lead	10.9J	ug/L	100	5.1	100	10/19/12 17:15	10/24/12 11:11	7439-92-1	
Manganese	74.1J	ug/L	100	23.0	100	10/19/12 17:15	10/24/12 11:11	7439-96-5	B
Nickel	ND	ug/L	100	35.0	100	10/19/12 17:15	10/24/12 11:11	7440-02-0	D3
Selenium	40.6J	ug/L	100	35.0	100	10/19/12 17:15	10/24/12 11:11	7782-49-2	
Zinc	357J	ug/L	1000	160	100	10/19/12 17:15	10/24/12 11:11	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	100	14.0	100	10/19/12 17:15	10/24/12 11:51	7440-38-2	D3
Cadmium, Dissolved	ND	ug/L	50.0	9.7	100	10/19/12 17:15	10/24/12 11:51	7440-43-9	D3
Chromium, Dissolved	14.7J	ug/L	100	11.0	100	10/19/12 17:15	10/24/12 11:51	7440-47-3	
Cobalt, Dissolved	ND	ug/L	100	4.8	100	10/19/12 17:15	10/24/12 11:51	7440-48-4	D3
Copper, Dissolved	ND	ug/L	100	45.0	100	10/19/12 17:15	10/24/12 11:51	7440-50-8	D3
Lead, Dissolved	9.0J	ug/L	100	5.1	100	10/19/12 17:15	10/24/12 11:51	7439-92-1	
Manganese, Dissolved	66.6J	ug/L	100	23.0	100	10/19/12 17:15	10/24/12 11:51	7439-96-5	
Nickel, Dissolved	ND	ug/L	100	35.0	100	10/19/12 17:15	10/24/12 11:51	7440-02-0	D3
Selenium, Dissolved	38.2J	ug/L	100	35.0	100	10/19/12 17:15	10/24/12 11:51	7782-49-2	
Zinc, Dissolved	321J	ug/L	1000	160	100	10/19/12 17:15	10/24/12 11:51	7440-66-6	B
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	ND	mg/L	6000	360	10		10/22/12 11:57		
Alkalinity, Carbonate (CaCO ₃)	257000	mg/L	6000	360	10		10/22/12 11:57		
Alkalinity, Hydroxide (CaCO ₃)	3510J	mg/L	6000	360	10		10/22/12 11:57		
Alkalinity, Total as CaCO ₃	260000	mg/L	6000	360	10		10/22/12 11:57		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131530

Sample: 517SHAFT465121017 Lab ID: 60131530004 Collected: 10/17/12 09:15 Received: 10/19/12 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	297000	ug/L	1000	358	10	10/19/12 17:15	10/22/12 16:33	7440-70-2	
Iron	2240	ug/L	500	172	10	10/19/12 17:15	10/22/12 16:33	7439-89-6	
Magnesium	25000	ug/L	500	172	10	10/19/12 17:15	10/22/12 16:33	7439-95-4	
Potassium	109000	ug/L	5000	641	10	10/19/12 17:15	10/22/12 16:33	7440-09-7	B
Sodium	9980	ug/L	5000	401	10	10/19/12 17:15	10/22/12 16:33	7440-23-5	B
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	289000	ug/L	100	35.8	1	10/19/12 17:15	10/24/12 11:02	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	17.2	1	10/19/12 17:15	10/24/12 11:02	7439-89-6	
Lithium, Dissolved	31.9	ug/L	10.0	3.7	1	10/19/12 17:15	10/24/12 11:02	7439-93-2	
Magnesium, Dissolved	23700	ug/L	50.0	17.2	1	10/19/12 17:15	10/24/12 11:02	7439-95-4	
Potassium, Dissolved	75900	ug/L	500	64.1	1	10/19/12 17:15	10/24/12 11:02	7440-09-7	B
Sodium, Dissolved	9410	ug/L	500	40.1	1	10/19/12 17:15	10/24/12 11:02	7440-23-5	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	ND	ug/L	5.0	0.70	5	10/19/12 17:15	10/24/12 13:20	7440-38-2	D3
Cadmium	31.7	ug/L	2.5	0.48	5	10/19/12 17:15	10/24/12 13:20	7440-43-9	
Chromium	0.64J	ug/L	5.0	0.55	5	10/19/12 17:15	10/24/12 13:20	7440-47-3	
Cobalt	2.8J	ug/L	5.0	0.24	5	10/19/12 17:15	10/24/12 13:20	7440-48-4	
Copper	83.2	ug/L	5.0	2.2	5	10/19/12 17:15	10/24/12 13:20	7440-50-8	
Lead	20.1	ug/L	5.0	0.26	5	10/19/12 17:15	10/24/12 13:20	7439-92-1	
Manganese	2710	ug/L	5.0	1.2	5	10/19/12 17:15	10/24/12 13:20	7439-96-5	B
Nickel	4.2J	ug/L	5.0	1.8	5	10/19/12 17:15	10/24/12 13:20	7440-02-0	
Selenium	ND	ug/L	5.0	1.8	5	10/19/12 17:15	10/24/12 13:20	7782-49-2	D3
Zinc	5560	ug/L	50.0	8.0	5	10/19/12 17:15	10/24/12 13:20	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	5.0	0.70	5	10/19/12 17:15	10/24/12 13:41	7440-38-2	D3
Cadmium, Dissolved	33.7	ug/L	2.5	0.48	5	10/19/12 17:15	10/24/12 13:41	7440-43-9	D9
Chromium, Dissolved	ND	ug/L	5.0	0.55	5	10/19/12 17:15	10/24/12 13:41	7440-47-3	D3
Cobalt, Dissolved	2.8J	ug/L	5.0	0.24	5	10/19/12 17:15	10/24/12 13:41	7440-48-4	
Copper, Dissolved	16.5	ug/L	5.0	2.2	5	10/19/12 17:15	10/24/12 13:41	7440-50-8	
Lead, Dissolved	ND	ug/L	5.0	0.26	5	10/19/12 17:15	10/24/12 13:41	7439-92-1	D3
Manganese, Dissolved	2680	ug/L	5.0	1.2	5	10/19/12 17:15	10/24/12 13:41	7439-96-5	
Nickel, Dissolved	3.5J	ug/L	5.0	1.8	5	10/19/12 17:15	10/24/12 13:41	7440-02-0	
Selenium, Dissolved	ND	ug/L	5.0	1.8	5	10/19/12 17:15	10/24/12 13:41	7782-49-2	D3
Zinc, Dissolved	5180	ug/L	50.0	8.0	5	10/19/12 17:15	10/24/12 13:41	7440-66-6	B
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	222	mg/L	20.0	1.2	1		10/19/12 13:42		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/19/12 13:42		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/19/12 13:42		
Alkalinity, Total as CaCO ₃	222	mg/L	20.0	1.2	1		10/19/12 13:42		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131530

Sample: 517SHAFT465121017		Lab ID: 60131530004		Collected: 10/17/12 09:15		Received: 10/19/12 10:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.28J	mg/L	1.0	0.078	1		10/19/12 19:56	24959-67-9	
Chloride	0.85J	mg/L	1.0	0.50	1		10/19/12 19:56	16887-00-6	
Fluoride	2.6	mg/L	0.20	0.011	1		10/19/12 19:56	16984-48-8	
Sulfate	835	mg/L	100	12.0	100		10/19/12 20:14	14808-79-8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131530

QC Batch: MPRP/20081 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60131530001, 60131530002, 60131530003, 60131530004

METHOD BLANK: 1083030 Matrix: Water
Associated Lab Samples: 60131530001, 60131530002, 60131530003, 60131530004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	10/22/12 16:06	
Calcium	ug/L	ND	100	10/22/12 16:06	
Iron	ug/L	ND	50.0	10/22/12 16:06	
Magnesium	ug/L	ND	50.0	10/22/12 16:06	
Potassium	ug/L	147J	500	10/22/12 16:06	
Silicon	ug/L	ND	500	10/22/12 16:06	
Sodium	ug/L	55.2J	500	10/22/12 16:06	

LABORATORY CONTROL SAMPLE: 1083031

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	9780	98	85-115	
Calcium	ug/L	10000	9820	98	85-115	
Iron	ug/L	10000	9980	100	85-115	
Magnesium	ug/L	10000	10200	102	85-115	
Potassium	ug/L	10000	10100	101	85-115	
Silicon	ug/L	5000	4880	98	85-115	
Sodium	ug/L	10000	10100	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1083032 1083033

Parameter	Units	60131530001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	233000	10000	10000	255000	256000	215	221	70-130	0	8	
Calcium	ug/L	381000	10000	10000	409000	410000	278	289	70-130	0	9 M6	
Iron	ug/L	274000 0	10000	10000	2850000	2880000	1120	1390	70-130	1	10 M6	
Magnesium	ug/L	235000	10000	10000	257000	260000	219	249	70-130	1	9 M6	
Potassium	ug/L	ND	10000	10000	9610	9330	95	92	70-130	3	7	
Silicon	ug/L	50200	5000	5000	57500	57500	145	145	70-130	0	5	
Sodium	ug/L	21700	10000	10000	32700	32700	109	110	70-130	0	8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131530

QC Batch:	MPRP/20080	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Dissolved
Associated Lab Samples:	60131530001, 60131530002, 60131530003, 60131530004		

METHOD BLANK: 1083022 Matrix: Water

Associated Lab Samples: 60131530001, 60131530002, 60131530003, 60131530004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	10/22/12 16:47	
Calcium, Dissolved	ug/L	ND	100	10/22/12 16:47	
Iron, Dissolved	ug/L	ND	50.0	10/22/12 16:47	
Lithium, Dissolved	ug/L	ND	10.0	10/22/12 16:47	
Magnesium, Dissolved	ug/L	ND	50.0	10/22/12 16:47	
Potassium, Dissolved	ug/L	291J	500	10/22/12 16:47	
Silicon, Dissolved	ug/L	ND	500	10/22/12 16:47	
Sodium, Dissolved	ug/L	ND	500	10/22/12 16:47	

LABORATORY CONTROL SAMPLE: 1083023

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	9780	98	85-115	
Calcium, Dissolved	ug/L	10000	9700	97	85-115	
Iron, Dissolved	ug/L	10000	9750	97	85-115	
Lithium, Dissolved	ug/L	1000	918	92	85-115	
Magnesium, Dissolved	ug/L	10000	10200	102	85-115	
Potassium, Dissolved	ug/L	10000	10100	101	85-115	
Silicon, Dissolved	ug/L	5000	4770	95	85-115	
Sodium, Dissolved	ug/L	10000	10100	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1083024 1083025

Parameter	60131530001		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
	Units	Result	Conc.	Conc.							
Aluminum, Dissolved	ug/L	254000	10000	10000	270000	263000	163	86	70-130	3	8
Calcium, Dissolved	ug/L	409000	10000	10000	426000	416000	174	79	70-130	2	9 M6
Iron, Dissolved	ug/L	2880000	10000	10000	2960000	2900000	860	180	70-130	2	10 M6
Lithium, Dissolved	ug/L	362	1000	1000	1290	1280	93	92	70-130	1	20
Magnesium, Dissolved	ug/L	258000	10000	10000	275000	267000	167	92	70-130	3	9 M6
Potassium, Dissolved	ug/L	1330J	10000	10000	10500	10400	92	91	70-130	1	7
Silicon, Dissolved	ug/L	52500	5000	5000	58300	56900	115	88	70-130	2	5
Sodium, Dissolved	ug/L	23700	10000	10000	34500	33700	108	100	70-130	2	8

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131530

QC Batch: MPRP/20083 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60131530001, 60131530002, 60131530003, 60131530004

METHOD BLANK: 1083044 Matrix: Water

Associated Lab Samples: 60131530001, 60131530002, 60131530003, 60131530004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	10/24/12 10:47	
Cadmium	ug/L	ND	0.50	10/24/12 10:47	
Chromium	ug/L	ND	1.0	10/24/12 10:47	
Cobalt	ug/L	ND	1.0	10/24/12 10:47	
Copper	ug/L	ND	1.0	10/24/12 10:47	
Lead	ug/L	ND	1.0	10/24/12 10:47	
Manganese	ug/L	4.5	1.0	10/24/12 10:47	
Nickel	ug/L	ND	1.0	10/24/12 10:47	
Selenium	ug/L	ND	1.0	10/24/12 10:47	
Zinc	ug/L	2.5J	10.0	10/24/12 10:47	

LABORATORY CONTROL SAMPLE: 1083045

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	41.0	102	85-115	
Cadmium	ug/L	40	40.9	102	85-115	
Chromium	ug/L	40	41.2	103	85-115	
Cobalt	ug/L	40	40.0	100	85-115	
Copper	ug/L	40	40.8	102	85-115	
Lead	ug/L	40	40.2	100	85-115	
Manganese	ug/L	40	41.1	103	85-115	
Nickel	ug/L	40	40.9	102	85-115	
Selenium	ug/L	40	40.3	101	85-115	
Zinc	ug/L	100	109	109	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1083046 1083047

Parameter	Units	60131530001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	3620	40	40	3580	3590	-98	-70	70-130	0	20	M6
Cadmium	ug/L	3390	40	40	3420	3410	80	55	70-130	0	20	M6
Chromium	ug/L	240	40	40	276	282	90	105	70-130	2	20	
Cobalt	ug/L	452	40	40	493	495	104	110	70-130	0	20	
Copper	ug/L	34600	40	40	34100	34300	-1275	-925	70-130	0	20	M6
Lead	ug/L	852	40	40	881	884	74	81	70-130	0	20	
Manganese	ug/L	220000	40	40	217000	216000	-7750	-8500	70-130	0	20	M6
Nickel	ug/L	530	40	40	576	576	116	117	70-130	0	20	
Selenium	ug/L	49.5J	40	40	87.9J	84.8J	96	88	70-130		20	
Zinc	ug/L	575000	100	100	568000	568000	-7600	-7300	70-130	0	20	M6

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131530

QC Batch: MPRP/20082 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60131530001, 60131530002, 60131530003, 60131530004

METHOD BLANK: 1083037 Matrix: Water

Associated Lab Samples: 60131530001, 60131530002, 60131530003, 60131530004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	10/24/12 11:28	
Cadmium, Dissolved	ug/L	ND	0.50	10/24/12 11:28	
Chromium, Dissolved	ug/L	ND	1.0	10/24/12 11:28	
Cobalt, Dissolved	ug/L	ND	1.0	10/24/12 11:28	
Copper, Dissolved	ug/L	ND	1.0	10/24/12 11:28	
Lead, Dissolved	ug/L	ND	1.0	10/24/12 11:28	
Manganese, Dissolved	ug/L	ND	1.0	10/24/12 11:28	
Nickel, Dissolved	ug/L	ND	1.0	10/24/12 11:28	
Selenium, Dissolved	ug/L	ND	1.0	10/24/12 11:28	
Zinc, Dissolved	ug/L	2.6J	10.0	10/24/12 11:28	

LABORATORY CONTROL SAMPLE: 1083038

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	41.1	103	85-115	
Cadmium, Dissolved	ug/L	40	41.4	103	85-115	
Chromium, Dissolved	ug/L	40	41.0	103	85-115	
Cobalt, Dissolved	ug/L	40	39.6	99	85-115	
Copper, Dissolved	ug/L	40	40.6	102	85-115	
Lead, Dissolved	ug/L	40	41.1	103	85-115	
Manganese, Dissolved	ug/L	40	41.5	104	85-115	
Nickel, Dissolved	ug/L	40	40.4	101	85-115	
Selenium, Dissolved	ug/L	40	41.4	104	85-115	
Zinc, Dissolved	ug/L	100	110	110	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1083039 1083040

Parameter	Units	60131530001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	3460	40	40	3470	3440	20	-55	70-130	1	20	M6
Cadmium, Dissolved	ug/L	3350	40	40	3380	3400	70	128	70-130	1	20	
Chromium, Dissolved	ug/L	232	40	40	269	275	94	109	70-130	2	20	
Cobalt, Dissolved	ug/L	433	40	40	474	476	102	108	70-130	1	20	
Copper, Dissolved	ug/L	32700	40	40	32800	32700	200	-175	70-130	0	20	M6
Lead, Dissolved	ug/L	829	40	40	868	855	97	64	70-130	2	20	M6
Manganese, Dissolved	ug/L	214000	40	40	213000	211000	-3000	-8000	70-130	1	20	M6
Nickel, Dissolved	ug/L	512	40	40	556	544	111	79	70-130	2	20	
Selenium, Dissolved	ug/L	45.1J	40	40	87.1J	82.7J	105	94	70-130		20	
Zinc, Dissolved	ug/L	555000	100	100	549000	549000	-5800	-5700	70-130	0	20	M6

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131530

QC Batch: WET/37778

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60131530001, 60131530002, 60131530003, 60131530004

METHOD BLANK: 1082932

Matrix: Water

Associated Lab Samples: 60131530001, 60131530002, 60131530003, 60131530004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	10/19/12 13:12	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	10/19/12 13:12	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	10/19/12 13:12	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	10/19/12 13:12	

LABORATORY CONTROL SAMPLE: 1082933

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	473	95	90-110	

SAMPLE DUPLICATE: 1082934

Parameter	Units	60131530001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	ND	ND		9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	ND		9	

SAMPLE DUPLICATE: 1082935

Parameter	Units	60131431002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	181	177	2	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	181	177	2	9	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Project No.: 60131530

QC Batch: WETA/22136 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60131530001, 60131530002, 60131530004

METHOD BLANK: 1082896 Matrix: Water

Associated Lab Samples: 60131530001, 60131530002, 60131530004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	10/19/12 16:17	
Chloride	mg/L	ND	1.0	10/19/12 16:17	
Fluoride	mg/L	ND	0.20	10/19/12 16:17	
Sulfate	mg/L	ND	1.0	10/19/12 16:17	

LABORATORY CONTROL SAMPLE: 1082897

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.0	100	90-110	
Chloride	mg/L	5	4.9	98	90-110	
Fluoride	mg/L	2.5	2.4	97	90-110	
Sulfate	mg/L	5	5.0	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1082898 1082899

Parameter	Units	60131530004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	0.28J	5	5	5.3	5.2	100	99	75-119	2	10	
Chloride	mg/L	0.85J	5	5	5.4	5.4	90	91	64-118	1	12	
Fluoride	mg/L	2.6	2.5	2.5	5.0	4.7	96	84	75-110	6	10	
Sulfate	mg/L	835	500	500	1280	1270	89	87	61-119	1	10	

QUALIFIERS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131530

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131530

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60131530001	BLAINE0BF121016	EPA 200.7	MPRP/20081	EPA 200.7	ICP/16457
60131530002	BLAINE1BF121016	EPA 200.7	MPRP/20081	EPA 200.7	ICP/16457
60131530003	517INJECT121016	EPA 200.7	MPRP/20081	EPA 200.7	ICP/16457
60131530004	517SHAFT465121017	EPA 200.7	MPRP/20081	EPA 200.7	ICP/16457
60131530001	BLAINE0BF121016	EPA 200.7	MPRP/20080	EPA 200.7	ICP/16455
60131530002	BLAINE1BF121016	EPA 200.7	MPRP/20080	EPA 200.7	ICP/16455
60131530003	517INJECT121016	EPA 200.7	MPRP/20080	EPA 200.7	ICP/16455
60131530004	517SHAFT465121017	EPA 200.7	MPRP/20080	EPA 200.7	ICP/16455
60131530001	BLAINE0BF121016	EPA 200.8	MPRP/20083	EPA 200.8	ICPM/1742
60131530002	BLAINE1BF121016	EPA 200.8	MPRP/20083	EPA 200.8	ICPM/1742
60131530003	517INJECT121016	EPA 200.8	MPRP/20083	EPA 200.8	ICPM/1742
60131530004	517SHAFT465121017	EPA 200.8	MPRP/20083	EPA 200.8	ICPM/1742
60131530001	BLAINE0BF121016	EPA 200.8	MPRP/20082	EPA 200.8	ICPM/1741
60131530002	BLAINE1BF121016	EPA 200.8	MPRP/20082	EPA 200.8	ICPM/1741
60131530003	517INJECT121016	EPA 200.8	MPRP/20082	EPA 200.8	ICPM/1741
60131530004	517SHAFT465121017	EPA 200.8	MPRP/20082	EPA 200.8	ICPM/1741
60131530001	BLAINE0BF121016	SM 2320B	WET/37778		
60131530002	BLAINE1BF121016	SM 2320B	WET/37778		
60131530003	517INJECT121016	SM 2320B	WET/37778		
60131530004	517SHAFT465121017	SM 2320B	WET/37778		
60131530001	BLAINE0BF121016	EPA 300.0	WETA/22136		
60131530002	BLAINE1BF121016	EPA 300.0	WETA/22136		
60131530004	517SHAFT465121017	EPA 300.0	WETA/22136		

October 25, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60131532

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on October 19, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131532

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131532

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60131532001	DR3A1210170900	Water	10/17/12 09:00	10/19/12 10:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131532

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60131532001	DR3A1210170900	EPA 200.7	JGP	5
		EPA 200.7	JGP	6
		EPA 200.8	JGP	10
		EPA 200.8	JGP	10
		SM 2320B	DJR	4
		EPA 300.0	AJM	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131532

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: October 25, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20081

B: Analyte was detected in the associated method blank.

- DR3A1210170900 (Lab ID: 60131532001)
 - Potassium
 - Sodium

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131532

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: October 25, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20080

B: Analyte was detected in the associated method blank.

- DR3A1210170900 (Lab ID: 60131532001)
- Potassium, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131532

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: October 25, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20083

B: Analyte was detected in the associated method blank.

- DR3A1210170900 (Lab ID: 60131532001)
 - Manganese
 - Zinc

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210170900 (Lab ID: 60131532001)
 - Arsenic
 - Chromium
 - Selenium

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131532

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: October 25, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20082

B: Analyte was detected in the associated method blank.

- DR3A1210170900 (Lab ID: 60131532001)
- Zinc, Dissolved

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210170900 (Lab ID: 60131532001)
- Arsenic, Dissolved
- Chromium, Dissolved
- Lead, Dissolved
- Selenium, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131532

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: October 25, 2012

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131532

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: October 25, 2012

General Information:

1 sample was analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131532

Sample: DR3A1210170900 Lab ID: 60131532001 Collected: 10/17/12 09:00 Received: 10/19/12 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	212000	ug/L	1000	358	10	10/19/12 17:15	10/22/12 16:36	7440-70-2	
Iron	4320	ug/L	500	172	10	10/19/12 17:15	10/22/12 16:36	7439-89-6	
Magnesium	19600	ug/L	500	172	10	10/19/12 17:15	10/22/12 16:36	7439-95-4	
Potassium	86700	ug/L	5000	641	10	10/19/12 17:15	10/22/12 16:36	7440-09-7	B
Sodium	11600	ug/L	5000	401	10	10/19/12 17:15	10/22/12 16:36	7440-23-5	B
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	214000	ug/L	1000	358	10	10/19/12 17:15	10/22/12 17:18	7440-70-2	D9
Iron, Dissolved	ND	ug/L	500	172	10	10/19/12 17:15	10/22/12 17:18	7439-89-6	
Lithium, Dissolved	177	ug/L	100	36.6	10	10/19/12 17:15	10/22/12 17:18	7439-93-2	
Magnesium, Dissolved	19500	ug/L	500	172	10	10/19/12 17:15	10/22/12 17:18	7439-95-4	
Potassium, Dissolved	107000	ug/L	5000	641	10	10/19/12 17:15	10/22/12 17:18	7440-09-7	B,D9
Sodium, Dissolved	11600	ug/L	5000	401	10	10/19/12 17:15	10/22/12 17:18	7440-23-5	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	ND	ug/L	5.0	0.70	5	10/19/12 17:15	10/24/12 13:07	7440-38-2	D3
Cadmium	16.0	ug/L	2.5	0.48	5	10/19/12 17:15	10/24/12 13:07	7440-43-9	
Chromium	ND	ug/L	5.0	0.55	5	10/19/12 17:15	10/24/12 13:07	7440-47-3	D3
Cobalt	2.7J	ug/L	5.0	0.24	5	10/19/12 17:15	10/24/12 13:07	7440-48-4	
Copper	41.2	ug/L	5.0	2.2	5	10/19/12 17:15	10/24/12 13:07	7440-50-8	
Lead	1.7J	ug/L	5.0	0.26	5	10/19/12 17:15	10/24/12 13:07	7439-92-1	
Manganese	1830	ug/L	5.0	1.2	5	10/19/12 17:15	10/24/12 13:07	7439-96-5	B
Nickel	3.2J	ug/L	5.0	1.8	5	10/19/12 17:15	10/24/12 13:07	7440-02-0	
Selenium	ND	ug/L	5.0	1.8	5	10/19/12 17:15	10/24/12 13:07	7782-49-2	D3
Zinc	3070	ug/L	50.0	8.0	5	10/19/12 17:15	10/24/12 13:07	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	5.0	0.70	5	10/19/12 17:15	10/24/12 13:44	7440-38-2	D3
Cadmium, Dissolved	14.6	ug/L	2.5	0.48	5	10/19/12 17:15	10/24/12 13:44	7440-43-9	
Chromium, Dissolved	ND	ug/L	5.0	0.55	5	10/19/12 17:15	10/24/12 13:44	7440-47-3	D3
Cobalt, Dissolved	2.6J	ug/L	5.0	0.24	5	10/19/12 17:15	10/24/12 13:44	7440-48-4	
Copper, Dissolved	2.5J	ug/L	5.0	2.2	5	10/19/12 17:15	10/24/12 13:44	7440-50-8	
Lead, Dissolved	ND	ug/L	5.0	0.26	5	10/19/12 17:15	10/24/12 13:44	7439-92-1	D3
Manganese, Dissolved	1780	ug/L	5.0	1.2	5	10/19/12 17:15	10/24/12 13:44	7439-96-5	
Nickel, Dissolved	2.5J	ug/L	5.0	1.8	5	10/19/12 17:15	10/24/12 13:44	7440-02-0	
Selenium, Dissolved	ND	ug/L	5.0	1.8	5	10/19/12 17:15	10/24/12 13:44	7782-49-2	D3
Zinc, Dissolved	2840	ug/L	50.0	8.0	5	10/19/12 17:15	10/24/12 13:44	7440-66-6	B
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	108	mg/L	20.0	1.2	1		10/19/12 13:46		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/19/12 13:46		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/19/12 13:46		
Alkalinity, Total as CaCO3	108	mg/L	20.0	1.2	1		10/19/12 13:46		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131532

Sample: DR3A1210170900		Lab ID: 60131532001	Collected: 10/17/12 09:00	Received: 10/19/12 10:30	Matrix: Water				
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.26J	mg/L	1.0	0.078	1		10/19/12 21:09	24959-67-9	
Chloride	1.5	mg/L	1.0	0.50	1		10/19/12 21:09	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/19/12 21:09	16984-48-8	
Sulfate	646	mg/L	100	12.0	100		10/19/12 21:27	14808-79-8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131532

QC Batch: MPRP/20081

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60131532001

METHOD BLANK: 1083030

Matrix: Water

Associated Lab Samples: 60131532001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	ug/L	ND	100	10/22/12 16:06	
Iron	ug/L	ND	50.0	10/22/12 16:06	
Magnesium	ug/L	ND	50.0	10/22/12 16:06	
Potassium	ug/L	147J	500	10/22/12 16:06	
Sodium	ug/L	55.2J	500	10/22/12 16:06	

LABORATORY CONTROL SAMPLE: 1083031

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	9820	98	85-115	
Iron	ug/L	10000	9980	100	85-115	
Magnesium	ug/L	10000	10200	102	85-115	
Potassium	ug/L	10000	10100	101	85-115	
Sodium	ug/L	10000	10100	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1083032

1083033

Parameter	Units	60131530001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	381000	10000	10000	409000	410000	278	289	70-130	0	9	M6
Iron	ug/L	2740000	10000	10000	2850000	2880000	1120	1390	70-130	1	10	M6
Magnesium	ug/L	235000	10000	10000	257000	260000	219	249	70-130	1	9	M6
Potassium	ug/L	ND	10000	10000	9610	9330	95	92	70-130	3	7	
Sodium	ug/L	21700	10000	10000	32700	32700	109	110	70-130	0	8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131532

QC Batch: MPRP/20080

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60131532001

METHOD BLANK: 1083022

Matrix: Water

Associated Lab Samples: 60131532001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	10/22/12 16:47	
Iron, Dissolved	ug/L	ND	50.0	10/22/12 16:47	
Lithium, Dissolved	ug/L	ND	10.0	10/22/12 16:47	
Magnesium, Dissolved	ug/L	ND	50.0	10/22/12 16:47	
Potassium, Dissolved	ug/L	291J	500	10/22/12 16:47	
Sodium, Dissolved	ug/L	ND	500	10/22/12 16:47	

LABORATORY CONTROL SAMPLE: 1083023

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9700	97	85-115	
Iron, Dissolved	ug/L	10000	9750	97	85-115	
Lithium, Dissolved	ug/L	1000	918	92	85-115	
Magnesium, Dissolved	ug/L	10000	10200	102	85-115	
Potassium, Dissolved	ug/L	10000	10100	101	85-115	
Sodium, Dissolved	ug/L	10000	10100	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1083024

1083025

Parameter	Units	60131530001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium, Dissolved	ug/L	409000	10000	10000	426000	416000	174	79	70-130	2	9	M6
Iron, Dissolved	ug/L	2880000	10000	10000	2960000	2900000	860	180	70-130	2	10	M6
Lithium, Dissolved	ug/L	362	1000	1000	1290	1280	93	92	70-130	1	20	
Magnesium, Dissolved	ug/L	258000	10000	10000	275000	267000	167	92	70-130	3	9	M6
Potassium, Dissolved	ug/L	1330J	10000	10000	10500	10400	92	91	70-130	1	7	
Sodium, Dissolved	ug/L	23700	10000	10000	34500	33700	108	100	70-130	2	8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131532

QC Batch:	MPRP/20083	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET
Associated Lab Samples:	60131532001		

METHOD BLANK: 1083044 Matrix: Water

Associated Lab Samples: 60131532001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	10/24/12 10:47	
Cadmium	ug/L	ND	0.50	10/24/12 10:47	
Chromium	ug/L	ND	1.0	10/24/12 10:47	
Cobalt	ug/L	ND	1.0	10/24/12 10:47	
Copper	ug/L	ND	1.0	10/24/12 10:47	
Lead	ug/L	ND	1.0	10/24/12 10:47	
Manganese	ug/L	4.5	1.0	10/24/12 10:47	
Nickel	ug/L	ND	1.0	10/24/12 10:47	
Selenium	ug/L	ND	1.0	10/24/12 10:47	
Zinc	ug/L	2.5J	10.0	10/24/12 10:47	

LABORATORY CONTROL SAMPLE: 1083045

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	41.0	102	85-115	
Cadmium	ug/L	40	40.9	102	85-115	
Chromium	ug/L	40	41.2	103	85-115	
Cobalt	ug/L	40	40.0	100	85-115	
Copper	ug/L	40	40.8	102	85-115	
Lead	ug/L	40	40.2	100	85-115	
Manganese	ug/L	40	41.1	103	85-115	
Nickel	ug/L	40	40.9	102	85-115	
Selenium	ug/L	40	40.3	101	85-115	
Zinc	ug/L	100	109	109	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1083046 1083047

Parameter	Units	60131530001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	3620	40	40	3580	3590	-98	-70	70-130	0	20	M6
Cadmium	ug/L	3390	40	40	3420	3410	80	55	70-130	0	20	M6
Chromium	ug/L	240	40	40	276	282	90	105	70-130	2	20	
Cobalt	ug/L	452	40	40	493	495	104	110	70-130	0	20	
Copper	ug/L	34600	40	40	34100	34300	-1275	-925	70-130	0	20	M6
Lead	ug/L	852	40	40	881	884	74	81	70-130	0	20	
Manganese	ug/L	220000	40	40	217000	216000	-7750	-8500	70-130	0	20	M6
Nickel	ug/L	530	40	40	576	576	116	117	70-130	0	20	
Selenium	ug/L	49.5J	40	40	87.9J	84.8J	96	88	70-130		20	
Zinc	ug/L	575000	100	100	568000	568000	-7600	-7300	70-130	0	20	M6

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131532

QC Batch: MPRP/20082

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60131532001

METHOD BLANK: 1083037

Matrix: Water

Associated Lab Samples: 60131532001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	10/24/12 11:28	
Cadmium, Dissolved	ug/L	ND	0.50	10/24/12 11:28	
Chromium, Dissolved	ug/L	ND	1.0	10/24/12 11:28	
Cobalt, Dissolved	ug/L	ND	1.0	10/24/12 11:28	
Copper, Dissolved	ug/L	ND	1.0	10/24/12 11:28	
Lead, Dissolved	ug/L	ND	1.0	10/24/12 11:28	
Manganese, Dissolved	ug/L	ND	1.0	10/24/12 11:28	
Nickel, Dissolved	ug/L	ND	1.0	10/24/12 11:28	
Selenium, Dissolved	ug/L	ND	1.0	10/24/12 11:28	
Zinc, Dissolved	ug/L	2.6J	10.0	10/24/12 11:28	

LABORATORY CONTROL SAMPLE: 1083038

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	41.1	103	85-115	
Cadmium, Dissolved	ug/L	40	41.4	103	85-115	
Chromium, Dissolved	ug/L	40	41.0	103	85-115	
Cobalt, Dissolved	ug/L	40	39.6	99	85-115	
Copper, Dissolved	ug/L	40	40.6	102	85-115	
Lead, Dissolved	ug/L	40	41.1	103	85-115	
Manganese, Dissolved	ug/L	40	41.5	104	85-115	
Nickel, Dissolved	ug/L	40	40.4	101	85-115	
Selenium, Dissolved	ug/L	40	41.4	104	85-115	
Zinc, Dissolved	ug/L	100	110	110	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1083039 1083040

Parameter	Units	60131530001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	3460	40	40	3470	3440	20	-55	70-130	1	20	M6
Cadmium, Dissolved	ug/L	3350	40	40	3380	3400	70	128	70-130	1	20	
Chromium, Dissolved	ug/L	232	40	40	269	275	94	109	70-130	2	20	
Cobalt, Dissolved	ug/L	433	40	40	474	476	102	108	70-130	1	20	
Copper, Dissolved	ug/L	32700	40	40	32800	32700	200	-175	70-130	0	20	M6
Lead, Dissolved	ug/L	829	40	40	868	855	97	64	70-130	2	20	M6
Manganese, Dissolved	ug/L	214000	40	40	213000	211000	-3000	-8000	70-130	1	20	M6
Nickel, Dissolved	ug/L	512	40	40	556	544	111	79	70-130	2	20	
Selenium, Dissolved	ug/L	45.1J	40	40	87.1J	82.7J	105	94	70-130		20	
Zinc, Dissolved	ug/L	555000	100	100	549000	549000	-5800	-5700	70-130	0	20	M6

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131532

QC Batch: WET/37778

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60131532001

METHOD BLANK: 1082932

Matrix: Water

Associated Lab Samples: 60131532001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	10/19/12 13:12	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	10/19/12 13:12	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	10/19/12 13:12	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	10/19/12 13:12	

LABORATORY CONTROL SAMPLE: 1082933

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	473	95	90-110	

SAMPLE DUPLICATE: 1082934

Parameter	Units	60131530001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	ND	ND		9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	ND		9	

SAMPLE DUPLICATE: 1082935

Parameter	Units	60131431002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	181	177	2	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	181	177	2	9	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Project No.: 60131532

QC Batch: WETA/22136

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60131532001

METHOD BLANK: 1082896

Matrix: Water

Associated Lab Samples: 60131532001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	10/19/12 16:17	
Chloride	mg/L	ND	1.0	10/19/12 16:17	
Fluoride	mg/L	ND	0.20	10/19/12 16:17	
Sulfate	mg/L	ND	1.0	10/19/12 16:17	

LABORATORY CONTROL SAMPLE: 1082897

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.0	100	90-110	
Chloride	mg/L	5	4.9	98	90-110	
Fluoride	mg/L	2.5	2.4	97	90-110	
Sulfate	mg/L	5	5.0	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1082898

1082899

Parameter	Units	60131530004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	0.28J	5	5	5.3	5.2	100	99	75-119	2	10	
Chloride	mg/L	0.85J	5	5	5.4	5.4	90	91	64-118	1	12	
Fluoride	mg/L	2.6	2.5	2.5	5.0	4.7	96	84	75-110	6	10	
Sulfate	mg/L	835	500	500	1280	1270	89	87	61-119	1	10	

QUALIFIERS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131532

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131532

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60131532001	DR3A1210170900	EPA 200.7	MPRP/20081	EPA 200.7	ICP/16457
60131532001	DR3A1210170900	EPA 200.7	MPRP/20080	EPA 200.7	ICP/16455
60131532001	DR3A1210170900	EPA 200.8	MPRP/20083	EPA 200.8	ICPM/1742
60131532001	DR3A1210170900	EPA 200.8	MPRP/20082	EPA 200.8	ICPM/1741
60131532001	DR3A1210170900	SM 2320B	WET/37778		
60131532001	DR3A1210170900	EPA 300.0	WETA/22136		

October 25, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60131705

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on October 22, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131705

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131705

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60131705001	DR3A1210180900	Water	10/18/12 09:00	10/22/12 10:20
60131705002	DR3A1210190900	Water	10/19/12 09:00	10/22/12 10:20

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131705

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60131705001	DR3A1210180900	EPA 200.7	SMW	5
		EPA 200.7	SMW	6
		EPA 200.8	JGP	10
		EPA 200.8	JGP	10
		SM 2320B	DJR	4
		EPA 300.0	AJM	4
60131705002	DR3A1210190900	EPA 200.7	SMW	5
		EPA 200.7	SMW	6
		EPA 200.8	JGP	10
		EPA 200.8	JGP	10
		SM 2320B	DJR	4
		EPA 300.0	AJM	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131705

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: October 25, 2012

General Information:

2 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20107

B: Analyte was detected in the associated method blank.

- DR3A1210180900 (Lab ID: 60131705001)
 - Potassium
- DR3A1210190900 (Lab ID: 60131705002)
 - Potassium

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60131705

Method: EPA 200.7
Description: 200.7 Metals, Dissolved
Client: BP AMEC
Date: October 25, 2012

General Information:

2 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20106

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60131705001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1084815)
 - Calcium, Dissolved
- MSD (Lab ID: 1084816)
 - Calcium, Dissolved

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20106

B: Analyte was detected in the associated method blank.

- DR3A1210180900 (Lab ID: 60131705001)
 - Potassium, Dissolved
- DR3A1210190900 (Lab ID: 60131705002)
 - Potassium, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131705

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: October 25, 2012

Analyte Comments:

QC Batch: MPRP/20106

- DR3A1210180900 (Lab ID: 60131705001)
 - Iron, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60131705

Method: EPA 200.8
Description: 200.8 MET ICPMS
Client: BP AMEC
Date: October 25, 2012

General Information:

2 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20109

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60131705001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1084830)
 - Manganese
 - Zinc
- MSD (Lab ID: 1084831)
 - Manganese
 - Zinc

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131705

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: October 25, 2012

Analyte Comments:

QC Batch: MPRP/20109

B: Analyte was detected in the associated method blank.

- DR3A1210180900 (Lab ID: 60131705001)
 - Zinc
- DR3A1210190900 (Lab ID: 60131705002)
 - Zinc

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210180900 (Lab ID: 60131705001)
 - Arsenic
 - Chromium
 - Selenium
- DR3A1210190900 (Lab ID: 60131705002)
 - Arsenic
 - Chromium
 - Selenium

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131705

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: October 25, 2012

General Information:

2 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20108

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60131705001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1084825)
 - Manganese, Dissolved
 - Zinc, Dissolved
- MSD (Lab ID: 1084826)
 - Manganese, Dissolved
 - Zinc, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131705

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: October 25, 2012

Analyte Comments:

QC Batch: MPRP/20108

B: Analyte was detected in the associated method blank.

- DR3A1210180900 (Lab ID: 60131705001)
 - Zinc, Dissolved
- DR3A1210190900 (Lab ID: 60131705002)
 - Zinc, Dissolved

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210180900 (Lab ID: 60131705001)
 - Arsenic, Dissolved
 - Chromium, Dissolved
 - Lead, Dissolved
 - Selenium, Dissolved
- DR3A1210190900 (Lab ID: 60131705002)
 - Arsenic, Dissolved
 - Chromium, Dissolved
 - Lead, Dissolved
 - Selenium, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131705

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: October 25, 2012

General Information:

2 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60131705

Method: EPA 300.0
Description: 300.0 IC Anions 28 Days
Client: BP AMEC
Date: October 25, 2012

General Information:

2 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131705

Sample: DR3A1210180900 Lab ID: 60131705001 Collected: 10/18/12 09:00 Received: 10/22/12 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	206000	ug/L	100	35.8	1	10/22/12 17:00	10/24/12 10:45	7440-70-2	
Iron	3720	ug/L	50.0	17.2	1	10/22/12 17:00	10/24/12 10:45	7439-89-6	
Magnesium	17500	ug/L	50.0	17.2	1	10/22/12 17:00	10/24/12 10:45	7439-95-4	
Potassium	68100	ug/L	500	64.1	1	10/22/12 17:00	10/24/12 10:45	7440-09-7	B
Sodium	11000	ug/L	500	40.1	1	10/22/12 17:00	10/24/12 10:45	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	218000	ug/L	100	35.8	1	10/22/12 17:00	10/24/12 10:03	7440-70-2	D9,M1
Iron, Dissolved	24.4J	ug/L	50.0	17.2	1	10/22/12 17:00	10/24/12 10:03	7439-89-6	
Lithium, Dissolved	142	ug/L	10.0	3.7	1	10/22/12 17:00	10/24/12 10:03	7439-93-2	
Magnesium, Dissolved	18500	ug/L	50.0	17.2	1	10/22/12 17:00	10/24/12 10:03	7439-95-4	D9
Potassium, Dissolved	69800	ug/L	500	64.1	1	10/22/12 17:00	10/24/12 10:03	7440-09-7	B,D9
Sodium, Dissolved	11300	ug/L	500	40.1	1	10/22/12 17:00	10/24/12 10:03	7440-23-5	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	ND	ug/L	5.0	0.70	5	10/22/12 17:00	10/24/12 12:32	7440-38-2	D3
Cadmium	15.2	ug/L	2.5	0.48	5	10/22/12 17:00	10/24/12 12:32	7440-43-9	
Chromium	ND	ug/L	5.0	0.55	5	10/22/12 17:00	10/24/12 12:32	7440-47-3	D3
Cobalt	2.5J	ug/L	5.0	0.24	5	10/22/12 17:00	10/24/12 12:32	7440-48-4	
Copper	38.7	ug/L	5.0	2.2	5	10/22/12 17:00	10/24/12 12:32	7440-50-8	
Lead	1.5J	ug/L	5.0	0.26	5	10/22/12 17:00	10/24/12 12:32	7439-92-1	
Manganese	1740	ug/L	5.0	1.2	5	10/22/12 17:00	10/24/12 12:32	7439-96-5	M1
Nickel	2.5J	ug/L	5.0	1.8	5	10/22/12 17:00	10/24/12 12:32	7440-02-0	
Selenium	ND	ug/L	5.0	1.8	5	10/22/12 17:00	10/24/12 12:32	7782-49-2	D3
Zinc	2850	ug/L	50.0	8.0	5	10/22/12 17:00	10/24/12 12:32	7440-66-6	B,M1
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	5.0	0.70	5	10/22/12 17:00	10/24/12 13:24	7440-38-2	D3
Cadmium, Dissolved	14.4	ug/L	2.5	0.48	5	10/22/12 17:00	10/24/12 13:24	7440-43-9	
Chromium, Dissolved	ND	ug/L	5.0	0.55	5	10/22/12 17:00	10/24/12 13:24	7440-47-3	D3
Cobalt, Dissolved	2.6J	ug/L	5.0	0.24	5	10/22/12 17:00	10/24/12 13:24	7440-48-4	
Copper, Dissolved	3.0J	ug/L	5.0	2.2	5	10/22/12 17:00	10/24/12 13:24	7440-50-8	
Lead, Dissolved	ND	ug/L	5.0	0.26	5	10/22/12 17:00	10/24/12 13:24	7439-92-1	D3
Manganese, Dissolved	1780	ug/L	5.0	1.2	5	10/22/12 17:00	10/24/12 13:24	7439-96-5	D9,M1
Nickel, Dissolved	2.5J	ug/L	5.0	1.8	5	10/22/12 17:00	10/24/12 13:24	7440-02-0	
Selenium, Dissolved	ND	ug/L	5.0	1.8	5	10/22/12 17:00	10/24/12 13:24	7782-49-2	D3
Zinc, Dissolved	2820	ug/L	50.0	8.0	5	10/22/12 17:00	10/24/12 13:24	7440-66-6	B,M1
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	109	mg/L	20.0	1.2	1		10/23/12 08:41		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/23/12 08:41		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/23/12 08:41		
Alkalinity, Total as CaCO3	109	mg/L	20.0	1.2	1		10/23/12 08:41		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131705

Sample: DR3A1210180900		Lab ID: 60131705001		Collected: 10/18/12 09:00		Received: 10/22/12 10:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.26J	mg/L	1.0	0.078	1		10/23/12 13:01	24959-67-9	
Chloride	1.3	mg/L	1.0	0.50	1		10/23/12 13:01	16887-00-6	
Fluoride	2.3	mg/L	0.20	0.011	1		10/23/12 13:01	16984-48-8	
Sulfate	646	mg/L	100	12.0	100		10/23/12 13:19	14808-79-8	

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131705

Sample: DR3A1210190900 Lab ID: 60131705002 Collected: 10/19/12 09:00 Received: 10/22/12 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	203000	ug/L	100	35.8	1	10/22/12 17:00	10/24/12 10:58	7440-70-2	
Iron	3560	ug/L	50.0	17.2	1	10/22/12 17:00	10/24/12 10:58	7439-89-6	
Magnesium	17500	ug/L	50.0	17.2	1	10/22/12 17:00	10/24/12 10:58	7439-95-4	
Potassium	75500	ug/L	500	64.1	1	10/22/12 17:00	10/24/12 10:58	7440-09-7	B
Sodium	10900	ug/L	500	40.1	1	10/22/12 17:00	10/24/12 10:58	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	208000	ug/L	100	35.8	1	10/22/12 17:00	10/24/12 10:16	7440-70-2	D9
Iron, Dissolved	33.0J	ug/L	50.0	17.2	1	10/22/12 17:00	10/24/12 10:16	7439-89-6	
Lithium, Dissolved	132	ug/L	10.0	3.7	1	10/22/12 17:00	10/24/12 10:16	7439-93-2	
Magnesium, Dissolved	18100	ug/L	50.0	17.2	1	10/22/12 17:00	10/24/12 10:16	7439-95-4	D9
Potassium, Dissolved	76300	ug/L	500	64.1	1	10/22/12 17:00	10/24/12 10:16	7440-09-7	B,D9
Sodium, Dissolved	11100	ug/L	500	40.1	1	10/22/12 17:00	10/24/12 10:16	7440-23-5	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	ND	ug/L	5.0	0.70	5	10/22/12 17:00	10/24/12 12:46	7440-38-2	D3
Cadmium	14.4	ug/L	2.5	0.48	5	10/22/12 17:00	10/24/12 12:46	7440-43-9	
Chromium	ND	ug/L	5.0	0.55	5	10/22/12 17:00	10/24/12 12:46	7440-47-3	D3
Cobalt	2.4J	ug/L	5.0	0.24	5	10/22/12 17:00	10/24/12 12:46	7440-48-4	
Copper	38.0	ug/L	5.0	2.2	5	10/22/12 17:00	10/24/12 12:46	7440-50-8	
Lead	1.5J	ug/L	5.0	0.26	5	10/22/12 17:00	10/24/12 12:46	7439-92-1	
Manganese	1720	ug/L	5.0	1.2	5	10/22/12 17:00	10/24/12 12:46	7439-96-5	
Nickel	2.4J	ug/L	5.0	1.8	5	10/22/12 17:00	10/24/12 12:46	7440-02-0	
Selenium	ND	ug/L	5.0	1.8	5	10/22/12 17:00	10/24/12 12:46	7782-49-2	D3
Zinc	2810	ug/L	50.0	8.0	5	10/22/12 17:00	10/24/12 12:46	7440-66-6	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	5.0	0.70	5	10/22/12 17:00	10/24/12 13:37	7440-38-2	D3
Cadmium, Dissolved	14.0	ug/L	2.5	0.48	5	10/22/12 17:00	10/24/12 13:37	7440-43-9	
Chromium, Dissolved	ND	ug/L	5.0	0.55	5	10/22/12 17:00	10/24/12 13:37	7440-47-3	D3
Cobalt, Dissolved	2.4J	ug/L	5.0	0.24	5	10/22/12 17:00	10/24/12 13:37	7440-48-4	
Copper, Dissolved	3.1J	ug/L	5.0	2.2	5	10/22/12 17:00	10/24/12 13:37	7440-50-8	
Lead, Dissolved	ND	ug/L	5.0	0.26	5	10/22/12 17:00	10/24/12 13:37	7439-92-1	D3
Manganese, Dissolved	1760	ug/L	5.0	1.2	5	10/22/12 17:00	10/24/12 13:37	7439-96-5	D9
Nickel, Dissolved	2.7J	ug/L	5.0	1.8	5	10/22/12 17:00	10/24/12 13:37	7440-02-0	
Selenium, Dissolved	ND	ug/L	5.0	1.8	5	10/22/12 17:00	10/24/12 13:37	7782-49-2	D3
Zinc, Dissolved	2720	ug/L	50.0	8.0	5	10/22/12 17:00	10/24/12 13:37	7440-66-6	B
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	113	mg/L	20.0	1.2	1		10/23/12 08:48		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/23/12 08:48		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/23/12 08:48		
Alkalinity, Total as CaCO3	113	mg/L	20.0	1.2	1		10/23/12 08:48		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131705

Sample: DR3A1210190900		Lab ID: 60131705002		Collected: 10/19/12 09:00		Received: 10/22/12 10:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.25J	mg/L	1.0	0.078	1		10/23/12 13:37	24959-67-9	
Chloride	1.3	mg/L	1.0	0.50	1		10/23/12 13:37	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/23/12 13:37	16984-48-8	
Sulfate	642	mg/L	100	12.0	100		10/23/12 13:55	14808-79-8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131705

QC Batch: MPRP/20107

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60131705001, 60131705002

METHOD BLANK: 1084819

Matrix: Water

Associated Lab Samples: 60131705001, 60131705002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	ug/L	ND	100	10/24/12 10:38	
Iron	ug/L	ND	50.0	10/24/12 10:38	
Magnesium	ug/L	ND	50.0	10/24/12 10:38	
Potassium	ug/L	705	500	10/24/12 10:38	
Sodium	ug/L	ND	500	10/24/12 10:38	

LABORATORY CONTROL SAMPLE: 1084820

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	9690	97	85-115	
Iron	ug/L	10000	9830	98	85-115	
Magnesium	ug/L	10000	9240	92	85-115	
Potassium	ug/L	10000	10400	104	85-115	
Sodium	ug/L	10000	10100	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1084821

1084822

Parameter	Units	60131705001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	206000	10000	10000	217000	215000	110	86	70-130	1	9	
Iron	ug/L	3720	10000	10000	13200	13400	95	96	70-130	1	10	
Magnesium	ug/L	17500	10000	10000	27200	27200	97	97	70-130	0	9	
Potassium	ug/L	68100	10000	10000	77300	77100	92	90	70-130	0	7	
Sodium	ug/L	11000	10000	10000	21200	21400	102	104	70-130	1	8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131705

QC Batch: MPRP/20106

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60131705001, 60131705002

METHOD BLANK: 1084813

Matrix: Water

Associated Lab Samples: 60131705001, 60131705002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	10/24/12 09:56	
Iron, Dissolved	ug/L	ND	50.0	10/24/12 09:56	
Lithium, Dissolved	ug/L	ND	10.0	10/24/12 09:56	
Magnesium, Dissolved	ug/L	ND	50.0	10/24/12 09:56	
Potassium, Dissolved	ug/L	671	500	10/24/12 09:56	
Sodium, Dissolved	ug/L	ND	500	10/24/12 09:56	

LABORATORY CONTROL SAMPLE: 1084814

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	10000	100	85-115	
Iron, Dissolved	ug/L	10000	10000	100	85-115	
Lithium, Dissolved	ug/L	1000	963	96	85-115	
Magnesium, Dissolved	ug/L	10000	9460	95	85-115	
Potassium, Dissolved	ug/L	10000	10500	105	85-115	
Sodium, Dissolved	ug/L	10000	10100	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1084815 1084816

Parameter	Units	60131705001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium, Dissolved	ug/L	218000	10000	10000	222000	223000	31	47	70-130	1	9	M1
Iron, Dissolved	ug/L	24.4J	10000	10000	9640	9880	96	99	70-130	2	10	
Lithium, Dissolved	ug/L	142	1000	1000	1120	1140	97	99	70-130	2	20	
Magnesium, Dissolved	ug/L	18500	10000	10000	27800	27800	93	93	70-130	0	9	
Potassium, Dissolved	ug/L	69800	10000	10000	77800	78400	80	86	70-130	1	7	
Sodium, Dissolved	ug/L	11300	10000	10000	21200	21600	100	103	70-130	2	8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131705

QC Batch: MPRP/20109 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60131705001, 60131705002

METHOD BLANK: 1084828 Matrix: Water

Associated Lab Samples: 60131705001, 60131705002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	10/24/12 12:25	
Cadmium	ug/L	ND	0.50	10/24/12 12:25	
Chromium	ug/L	ND	1.0	10/24/12 12:25	
Cobalt	ug/L	ND	1.0	10/24/12 12:25	
Copper	ug/L	ND	1.0	10/24/12 12:25	
Lead	ug/L	ND	1.0	10/24/12 12:25	
Manganese	ug/L	ND	1.0	10/24/12 12:25	
Nickel	ug/L	ND	1.0	10/24/12 12:25	
Selenium	ug/L	ND	1.0	10/24/12 12:25	
Zinc	ug/L	2.9J	10.0	10/24/12 12:25	

LABORATORY CONTROL SAMPLE: 1084829

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	40.9	102	85-115	
Cadmium	ug/L	40	40.8	102	85-115	
Chromium	ug/L	40	40.6	101	85-115	
Cobalt	ug/L	40	39.5	99	85-115	
Copper	ug/L	40	40.6	102	85-115	
Lead	ug/L	40	40.1	100	85-115	
Manganese	ug/L	40	41.0	102	85-115	
Nickel	ug/L	40	40.0	100	85-115	
Selenium	ug/L	40	41.1	103	85-115	
Zinc	ug/L	100	109	109	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1084830 1084831

Parameter	Units	60131705001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	ND	40	40	40.4	41.7	100	103	70-130	3	20	
Cadmium	ug/L	15.2	40	40	54.3	57.0	98	104	70-130	5	20	
Chromium	ug/L	ND	40	40	39.4	41.4	98	103	70-130	5	20	
Cobalt	ug/L	2.5J	40	40	40.8	42.5	96	100	70-130	4	20	
Copper	ug/L	38.7	40	40	76.8	78.9	95	101	70-130	3	20	
Lead	ug/L	1.5J	40	40	40.4	41.9	97	101	70-130	4	20	
Manganese	ug/L	1740	40	40	1760	1830	50	215	70-130	4	20 M1	
Nickel	ug/L	2.5J	40	40	41.7	42.7	98	101	70-130	2	20	
Selenium	ug/L	ND	40	40	39.8	39.4	99	98	70-130	1	20	
Zinc	ug/L	2850	100	100	2870	3020	24	170	70-130	5	20 M1	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131705

QC Batch: MPRP/20108

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60131705001, 60131705002

METHOD BLANK: 1084823

Matrix: Water

Associated Lab Samples: 60131705001, 60131705002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	10/24/12 13:17	
Cadmium, Dissolved	ug/L	ND	0.50	10/24/12 13:17	
Chromium, Dissolved	ug/L	ND	1.0	10/24/12 13:17	
Cobalt, Dissolved	ug/L	ND	1.0	10/24/12 13:17	
Copper, Dissolved	ug/L	ND	1.0	10/24/12 13:17	
Lead, Dissolved	ug/L	0.091J	1.0	10/24/12 13:17	
Manganese, Dissolved	ug/L	ND	1.0	10/24/12 13:17	
Nickel, Dissolved	ug/L	ND	1.0	10/24/12 13:17	
Selenium, Dissolved	ug/L	ND	1.0	10/24/12 13:17	
Zinc, Dissolved	ug/L	3.3J	10.0	10/24/12 13:17	

LABORATORY CONTROL SAMPLE: 1084824

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	40.0	100	85-115	
Cadmium, Dissolved	ug/L	40	40.3	101	85-115	
Chromium, Dissolved	ug/L	40	40.5	101	85-115	
Cobalt, Dissolved	ug/L	40	38.8	97	85-115	
Copper, Dissolved	ug/L	40	39.8	100	85-115	
Lead, Dissolved	ug/L	40	39.5	99	85-115	
Manganese, Dissolved	ug/L	40	40.4	101	85-115	
Nickel, Dissolved	ug/L	40	39.7	99	85-115	
Selenium, Dissolved	ug/L	40	39.6	99	85-115	
Zinc, Dissolved	ug/L	100	108	108	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1084825 1084826

Parameter	Units	60131705001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	ND	40	40	39.9	40.2	99	100	70-130	1	20	
Cadmium, Dissolved	ug/L	14.4	40	40	54.2	53.9	100	99	70-130	1	20	
Chromium, Dissolved	ug/L	ND	40	40	39.1	38.9	97	97	70-130	0	20	
Cobalt, Dissolved	ug/L	2.6J	40	40	40.4	40.2	95	94	70-130	0	20	
Copper, Dissolved	ug/L	3.0J	40	40	40.5	39.5	94	91	70-130	2	20	
Lead, Dissolved	ug/L	ND	40	40	38.5	38.1	96	95	70-130	1	20	
Manganese, Dissolved	ug/L	1780	40	40	1790	1780	21	4	70-130	0	20 M1	
Nickel, Dissolved	ug/L	2.5J	40	40	39.4	40.5	92	95	70-130	3	20	
Selenium, Dissolved	ug/L	ND	40	40	39.1	39.6	98	99	70-130	1	20	
Zinc, Dissolved	ug/L	2820	100	100	2840	2810	26	-10	70-130	1	20 M1	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131705

QC Batch: WET/37819

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60131705001, 60131705002

METHOD BLANK: 1084946

Matrix: Water

Associated Lab Samples: 60131705001, 60131705002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	10/23/12 08:31	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	10/23/12 08:31	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	10/23/12 08:31	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	10/23/12 08:31	

LABORATORY CONTROL SAMPLE: 1084947

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	482	96	90-110	

SAMPLE DUPLICATE: 1084948

Parameter	Units	60131705001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	109	112	2	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	109	112	2	9	

SAMPLE DUPLICATE: 1084949

Parameter	Units	60131659001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	166	172	3	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	166	172	3	9	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Project No.: 60131705

QC Batch: WETA/22164

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60131705001, 60131705002

METHOD BLANK: 1085115

Matrix: Water

Associated Lab Samples: 60131705001, 60131705002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	10/23/12 11:48	
Chloride	mg/L	ND	1.0	10/23/12 11:48	
Fluoride	mg/L	ND	0.20	10/23/12 11:48	
Sulfate	mg/L	ND	1.0	10/23/12 11:48	

LABORATORY CONTROL SAMPLE: 1085116

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.0	100	90-110	
Chloride	mg/L	5	4.9	98	90-110	
Fluoride	mg/L	2.5	2.5	99	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1085117

1085118

Parameter	Units	60131762003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	0.26J	5	5	5.5	5.4	105	104	75-119	2	10	
Chloride	mg/L	1.2	5	5	5.8	5.7	92	90	64-118	2	12	
Fluoride	mg/L	2.2	2.5	2.5	4.7	4.7	101	100	75-110	1	10	
Sulfate	mg/L	643	500	500	1070	1090	86	89	61-119	1	10	

QUALIFIERS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131705

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131705

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60131705001	DR3A1210180900	EPA 200.7	MPRP/20107	EPA 200.7	ICP/16481
60131705002	DR3A1210190900	EPA 200.7	MPRP/20107	EPA 200.7	ICP/16481
60131705001	DR3A1210180900	EPA 200.7	MPRP/20106	EPA 200.7	ICP/16480
60131705002	DR3A1210190900	EPA 200.7	MPRP/20106	EPA 200.7	ICP/16480
60131705001	DR3A1210180900	EPA 200.8	MPRP/20109	EPA 200.8	ICPM/1752
60131705002	DR3A1210190900	EPA 200.8	MPRP/20109	EPA 200.8	ICPM/1752
60131705001	DR3A1210180900	EPA 200.8	MPRP/20108	EPA 200.8	ICPM/1751
60131705002	DR3A1210190900	EPA 200.8	MPRP/20108	EPA 200.8	ICPM/1751
60131705001	DR3A1210180900	SM 2320B	WET/37819		
60131705002	DR3A1210190900	SM 2320B	WET/37819		
60131705001	DR3A1210180900	EPA 300.0	WETA/22164		
60131705002	DR3A1210190900	EPA 300.0	WETA/22164		

October 25, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60131762

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on October 23, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Alice Flanagan for
Heather Wilson
heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131762

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131762

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60131762001	DR3A1210200900	Water	10/20/12 09:00	10/23/12 10:25
60131762002	DR3A1210210900	Water	10/21/12 09:00	10/23/12 10:25
60131762003	DR3A1210220900	Water	10/22/12 09:00	10/23/12 10:25

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131762

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60131762001	DR3A1210200900	EPA 200.7	TDS	5
		EPA 200.7	TDS	6
		EPA 200.8	JGP	10
		EPA 200.8	JGP	10
		SM 2320B	DJR	4
		EPA 300.0	AJM	4
60131762002	DR3A1210210900	EPA 200.7	TDS	5
		EPA 200.7	TDS	6
		EPA 200.8	JGP	10
		EPA 200.8	JGP	10
		SM 2320B	DJR	4
		EPA 300.0	AJM	4
60131762003	DR3A1210220900	EPA 200.7	TDS	5
		EPA 200.7	TDS	6
		EPA 200.8	JGP	10
		EPA 200.8	JGP	10
		SM 2320B	DJR	4
		EPA 300.0	AJM	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60131762

Method: EPA 200.7
Description: 200.7 Metals, Total
Client: BP AMEC
Date: October 25, 2012

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20131

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60131762003

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1085508)
 - Calcium
- MSD (Lab ID: 1085509)
 - Calcium

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20131

B: Analyte was detected in the associated method blank.

- DR3A1210200900 (Lab ID: 60131762001)
 - Potassium
- DR3A1210210900 (Lab ID: 60131762002)
 - Potassium
- DR3A1210220900 (Lab ID: 60131762003)
 - Potassium

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60131762

Method: EPA 200.7
Description: 200.7 Metals, Dissolved
Client: BP AMEC
Date: October 25, 2012

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20130

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60131762003

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1085501)
 - Calcium, Dissolved
- MSD (Lab ID: 1085502)
 - Calcium, Dissolved

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20130

B: Analyte was detected in the associated method blank.

- DR3A1210200900 (Lab ID: 60131762001)
 - Potassium, Dissolved
- DR3A1210210900 (Lab ID: 60131762002)
 - Potassium, Dissolved
- DR3A1210220900 (Lab ID: 60131762003)
 - Potassium, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131762

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: October 25, 2012

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20133

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60131762003

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1085517)
- Manganese

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20133

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210200900 (Lab ID: 60131762001)
 - Arsenic
 - Chromium
 - Selenium

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131762

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: October 25, 2012

Analyte Comments:

QC Batch: MPRP/20133

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210210900 (Lab ID: 60131762002)
 - Arsenic
 - Chromium
 - Selenium
- DR3A1210220900 (Lab ID: 60131762003)
 - Arsenic
 - Chromium
 - Selenium

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131762

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: October 25, 2012

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20132

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210200900 (Lab ID: 60131762001)
 - Arsenic, Dissolved
 - Chromium, Dissolved
 - Lead, Dissolved
 - Selenium, Dissolved
- DR3A1210210900 (Lab ID: 60131762002)
 - Arsenic, Dissolved
 - Lead, Dissolved
 - Selenium, Dissolved
- DR3A1210220900 (Lab ID: 60131762003)
 - Arsenic, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131762

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: October 25, 2012

Analyte Comments:

QC Batch: MPRP/20132

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210220900 (Lab ID: 60131762003)
 - Chromium, Dissolved
 - Lead, Dissolved
 - Selenium, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131762

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: October 25, 2012

General Information:

3 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131762

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: October 25, 2012

General Information:

3 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131762

Sample: DR3A1210200900 Lab ID: 60131762001 Collected: 10/20/12 09:00 Received: 10/23/12 10:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	216000	ug/L	100	35.8	1	10/23/12 18:00	10/25/12 11:02	7440-70-2	
Iron	3690	ug/L	50.0	17.2	1	10/23/12 18:00	10/25/12 11:02	7439-89-6	
Magnesium	18600	ug/L	50.0	17.2	1	10/23/12 18:00	10/25/12 11:02	7439-95-4	
Potassium	73300	ug/L	500	64.1	1	10/23/12 18:00	10/25/12 11:02	7440-09-7	B
Sodium	11600	ug/L	500	40.1	1	10/23/12 18:00	10/25/12 11:02	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	208000	ug/L	100	35.8	1	10/23/12 18:00	10/25/12 10:25	7440-70-2	
Iron, Dissolved	26.5J	ug/L	50.0	17.2	1	10/23/12 18:00	10/25/12 10:25	7439-89-6	
Lithium, Dissolved	124	ug/L	10.0	3.7	1	10/23/12 18:00	10/25/12 10:25	7439-93-2	
Magnesium, Dissolved	17800	ug/L	50.0	17.2	1	10/23/12 18:00	10/25/12 10:25	7439-95-4	
Potassium, Dissolved	69900	ug/L	500	64.1	1	10/23/12 18:00	10/25/12 10:25	7440-09-7	B
Sodium, Dissolved	11000	ug/L	500	40.1	1	10/23/12 18:00	10/25/12 10:25	7440-23-5	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	ND	ug/L	5.0	0.70	5	10/23/12 18:00	10/24/12 14:18	7440-38-2	D3
Cadmium	14.8	ug/L	2.5	0.48	5	10/23/12 18:00	10/24/12 14:18	7440-43-9	
Chromium	ND	ug/L	5.0	0.55	5	10/23/12 18:00	10/24/12 14:18	7440-47-3	D3
Cobalt	2.4J	ug/L	5.0	0.24	5	10/23/12 18:00	10/24/12 14:18	7440-48-4	
Copper	36.5	ug/L	5.0	2.2	5	10/23/12 18:00	10/24/12 14:18	7440-50-8	
Lead	1.6J	ug/L	5.0	0.26	5	10/23/12 18:00	10/24/12 14:18	7439-92-1	
Manganese	1740	ug/L	5.0	1.2	5	10/23/12 18:00	10/24/12 14:18	7439-96-5	
Nickel	2.5J	ug/L	5.0	1.8	5	10/23/12 18:00	10/24/12 14:18	7440-02-0	
Selenium	ND	ug/L	5.0	1.8	5	10/23/12 18:00	10/24/12 14:18	7782-49-2	D3
Zinc	2860	ug/L	50.0	8.0	5	10/23/12 18:00	10/24/12 14:18	7440-66-6	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	5.0	0.70	5	10/23/12 18:00	10/24/12 14:56	7440-38-2	D3
Cadmium, Dissolved	14.0	ug/L	2.5	0.48	5	10/23/12 18:00	10/24/12 14:56	7440-43-9	
Chromium, Dissolved	ND	ug/L	5.0	0.55	5	10/23/12 18:00	10/24/12 14:56	7440-47-3	D3
Cobalt, Dissolved	2.5J	ug/L	5.0	0.24	5	10/23/12 18:00	10/24/12 14:56	7440-48-4	
Copper, Dissolved	3.0J	ug/L	5.0	2.2	5	10/23/12 18:00	10/24/12 14:56	7440-50-8	
Lead, Dissolved	ND	ug/L	5.0	0.26	5	10/23/12 18:00	10/24/12 14:56	7439-92-1	D3
Manganese, Dissolved	1730	ug/L	5.0	1.2	5	10/23/12 18:00	10/24/12 14:56	7439-96-5	
Nickel, Dissolved	2.6J	ug/L	5.0	1.8	5	10/23/12 18:00	10/24/12 14:56	7440-02-0	
Selenium, Dissolved	ND	ug/L	5.0	1.8	5	10/23/12 18:00	10/24/12 14:56	7782-49-2	D3
Zinc, Dissolved	2700	ug/L	50.0	8.0	5	10/23/12 18:00	10/24/12 14:56	7440-66-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	115	mg/L	20.0	1.2	1		10/24/12 07:50		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/24/12 07:50		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/24/12 07:50		
Alkalinity, Total as CaCO ₃	115	mg/L	20.0	1.2	1		10/24/12 07:50		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131762

Sample: DR3A1210200900		Lab ID: 60131762001		Collected: 10/20/12 09:00		Received: 10/23/12 10:25		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.26J	mg/L	1.0	0.078	1		10/23/12 17:34	24959-67-9	
Chloride	1.3	mg/L	1.0	0.50	1		10/23/12 17:34	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/23/12 17:34	16984-48-8	
Sulfate	648	mg/L	100	12.0	100		10/23/12 17:52	14808-79-8	

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131762

Sample: DR3A1210210900 Lab ID: 60131762002 Collected: 10/21/12 09:00 Received: 10/23/12 10:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	207000	ug/L	100	35.8	1	10/23/12 18:00	10/25/12 11:05	7440-70-2	
Iron	3820	ug/L	50.0	17.2	1	10/23/12 18:00	10/25/12 11:05	7439-89-6	
Magnesium	17800	ug/L	50.0	17.2	1	10/23/12 18:00	10/25/12 11:05	7439-95-4	
Potassium	63100	ug/L	500	64.1	1	10/23/12 18:00	10/25/12 11:05	7440-09-7	B
Sodium	11000	ug/L	500	40.1	1	10/23/12 18:00	10/25/12 11:05	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	210000	ug/L	100	35.8	1	10/23/12 18:00	10/25/12 10:28	7440-70-2	D9
Iron, Dissolved	451	ug/L	50.0	17.2	1	10/23/12 18:00	10/25/12 10:28	7439-89-6	
Lithium, Dissolved	121	ug/L	10.0	3.7	1	10/23/12 18:00	10/25/12 10:28	7439-93-2	
Magnesium, Dissolved	18200	ug/L	50.0	17.2	1	10/23/12 18:00	10/25/12 10:28	7439-95-4	D9
Potassium, Dissolved	64000	ug/L	500	64.1	1	10/23/12 18:00	10/25/12 10:28	7440-09-7	B,D9
Sodium, Dissolved	11000	ug/L	500	40.1	1	10/23/12 18:00	10/25/12 10:28	7440-23-5	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	ND	ug/L	5.0	0.70	5	10/23/12 18:00	10/24/12 14:22	7440-38-2	D3
Cadmium	15.3	ug/L	2.5	0.48	5	10/23/12 18:00	10/24/12 14:22	7440-43-9	
Chromium	ND	ug/L	5.0	0.55	5	10/23/12 18:00	10/24/12 14:22	7440-47-3	D3
Cobalt	2.6J	ug/L	5.0	0.24	5	10/23/12 18:00	10/24/12 14:22	7440-48-4	
Copper	39.3	ug/L	5.0	2.2	5	10/23/12 18:00	10/24/12 14:22	7440-50-8	
Lead	1.6J	ug/L	5.0	0.26	5	10/23/12 18:00	10/24/12 14:22	7439-92-1	
Manganese	1770	ug/L	5.0	1.2	5	10/23/12 18:00	10/24/12 14:22	7439-96-5	
Nickel	3.0J	ug/L	5.0	1.8	5	10/23/12 18:00	10/24/12 14:22	7440-02-0	
Selenium	ND	ug/L	5.0	1.8	5	10/23/12 18:00	10/24/12 14:22	7782-49-2	D3
Zinc	2980	ug/L	50.0	8.0	5	10/23/12 18:00	10/24/12 14:22	7440-66-6	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	5.0	0.70	5	10/23/12 18:00	10/24/12 14:59	7440-38-2	D3
Cadmium, Dissolved	13.9	ug/L	2.5	0.48	5	10/23/12 18:00	10/24/12 14:59	7440-43-9	
Chromium, Dissolved	ND	ug/L	5.0	0.55	5	10/23/12 18:00	10/24/12 14:59	7440-47-3	
Cobalt, Dissolved	2.4J	ug/L	5.0	0.24	5	10/23/12 18:00	10/24/12 14:59	7440-48-4	
Copper, Dissolved	3.9J	ug/L	5.0	2.2	5	10/23/12 18:00	10/24/12 14:59	7440-50-8	
Lead, Dissolved	ND	ug/L	5.0	0.26	5	10/23/12 18:00	10/24/12 14:59	7439-92-1	D3
Manganese, Dissolved	1710	ug/L	5.0	1.2	5	10/23/12 18:00	10/24/12 14:59	7439-96-5	
Nickel, Dissolved	2.5J	ug/L	5.0	1.8	5	10/23/12 18:00	10/24/12 14:59	7440-02-0	
Selenium, Dissolved	ND	ug/L	5.0	1.8	5	10/23/12 18:00	10/24/12 14:59	7782-49-2	D3
Zinc, Dissolved	2760	ug/L	50.0	8.0	5	10/23/12 18:00	10/24/12 14:59	7440-66-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	112	mg/L	20.0	1.2	1		10/24/12 07:53		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/24/12 07:53		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/24/12 07:53		
Alkalinity, Total as CaCO3	112	mg/L	20.0	1.2	1		10/24/12 07:53		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131762

Sample: DR3A1210210900		Lab ID: 60131762002		Collected: 10/21/12 09:00		Received: 10/23/12 10:25		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.38J	mg/L	1.0	0.078	1		10/23/12 18:10	24959-67-9	
Chloride	1.3	mg/L	1.0	0.50	1		10/23/12 18:10	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/23/12 18:10	16984-48-8	
Sulfate	646	mg/L	100	12.0	100		10/23/12 18:28	14808-79-8	

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131762

Sample: DR3A1210220900 Lab ID: 60131762003 Collected: 10/22/12 09:00 Received: 10/23/12 10:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	209000	ug/L	100	35.8	1	10/23/12 18:00	10/25/12 11:08	7440-70-2	M1
Iron	3670	ug/L	50.0	17.2	1	10/23/12 18:00	10/25/12 11:08	7439-89-6	
Magnesium	18100	ug/L	50.0	17.2	1	10/23/12 18:00	10/25/12 11:08	7439-95-4	
Potassium	61100	ug/L	500	64.1	1	10/23/12 18:00	10/25/12 11:08	7440-09-7	B
Sodium	11100	ug/L	500	40.1	1	10/23/12 18:00	10/25/12 11:08	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	215000	ug/L	100	35.8	1	10/23/12 18:00	10/25/12 10:31	7440-70-2	D9,M1
Iron, Dissolved	221	ug/L	50.0	17.2	1	10/23/12 18:00	10/25/12 10:31	7439-89-6	
Lithium, Dissolved	120	ug/L	10.0	3.7	1	10/23/12 18:00	10/25/12 10:31	7439-93-2	
Magnesium, Dissolved	18100	ug/L	50.0	17.2	1	10/23/12 18:00	10/25/12 10:31	7439-95-4	
Potassium, Dissolved	62300	ug/L	500	64.1	1	10/23/12 18:00	10/25/12 10:31	7440-09-7	B,D9
Sodium, Dissolved	11300	ug/L	500	40.1	1	10/23/12 18:00	10/25/12 10:31	7440-23-5	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	ND	ug/L	5.0	0.70	5	10/23/12 18:00	10/24/12 14:25	7440-38-2	D3
Cadmium	15.4	ug/L	2.5	0.48	5	10/23/12 18:00	10/24/12 14:25	7440-43-9	
Chromium	ND	ug/L	5.0	0.55	5	10/23/12 18:00	10/24/12 14:25	7440-47-3	D3
Cobalt	2.5J	ug/L	5.0	0.24	5	10/23/12 18:00	10/24/12 14:25	7440-48-4	
Copper	38.5	ug/L	5.0	2.2	5	10/23/12 18:00	10/24/12 14:25	7440-50-8	
Lead	1.6J	ug/L	5.0	0.26	5	10/23/12 18:00	10/24/12 14:25	7439-92-1	
Manganese	1790	ug/L	5.0	1.2	5	10/23/12 18:00	10/24/12 14:25	7439-96-5	M1
Nickel	3.3J	ug/L	5.0	1.8	5	10/23/12 18:00	10/24/12 14:25	7440-02-0	
Selenium	ND	ug/L	5.0	1.8	5	10/23/12 18:00	10/24/12 14:25	7782-49-2	D3
Zinc	3010	ug/L	50.0	8.0	5	10/23/12 18:00	10/24/12 14:25	7440-66-6	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	5.0	0.70	5	10/23/12 18:00	10/24/12 15:02	7440-38-2	D3
Cadmium, Dissolved	13.6	ug/L	2.5	0.48	5	10/23/12 18:00	10/24/12 15:02	7440-43-9	
Chromium, Dissolved	ND	ug/L	5.0	0.55	5	10/23/12 18:00	10/24/12 15:02	7440-47-3	D3
Cobalt, Dissolved	2.4J	ug/L	5.0	0.24	5	10/23/12 18:00	10/24/12 15:02	7440-48-4	
Copper, Dissolved	3.1J	ug/L	5.0	2.2	5	10/23/12 18:00	10/24/12 15:02	7440-50-8	
Lead, Dissolved	ND	ug/L	5.0	0.26	5	10/23/12 18:00	10/24/12 15:02	7439-92-1	D3
Manganese, Dissolved	1760	ug/L	5.0	1.2	5	10/23/12 18:00	10/24/12 15:02	7439-96-5	
Nickel, Dissolved	2.7J	ug/L	5.0	1.8	5	10/23/12 18:00	10/24/12 15:02	7440-02-0	
Selenium, Dissolved	ND	ug/L	5.0	1.8	5	10/23/12 18:00	10/24/12 15:02	7782-49-2	D3
Zinc, Dissolved	2810	ug/L	50.0	8.0	5	10/23/12 18:00	10/24/12 15:02	7440-66-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	110	mg/L	20.0	1.2	1		10/24/12 07:57		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/24/12 07:57		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/24/12 07:57		
Alkalinity, Total as CaCO3	110	mg/L	20.0	1.2	1		10/24/12 07:57		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131762

Sample: DR3A1210220900		Lab ID: 60131762003		Collected: 10/22/12 09:00		Received: 10/23/12 10:25		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.26J	mg/L	1.0	0.078	1		10/23/12 18:46	24959-67-9	
Chloride	1.2	mg/L	1.0	0.50	1		10/23/12 18:46	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		10/23/12 18:46	16984-48-8	
Sulfate	643	mg/L	100	12.0	100		10/23/12 19:05	14808-79-8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131762

QC Batch: MPRP/20131 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60131762001, 60131762002, 60131762003

METHOD BLANK: 1085506 Matrix: Water

Associated Lab Samples: 60131762001, 60131762002, 60131762003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	ug/L	ND	100	10/25/12 10:48	
Iron	ug/L	ND	50.0	10/25/12 10:48	
Magnesium	ug/L	ND	50.0	10/25/12 10:48	
Potassium	ug/L	236J	500	10/25/12 10:48	
Sodium	ug/L	ND	500	10/25/12 10:48	

LABORATORY CONTROL SAMPLE: 1085507

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	9320	93	85-115	
Iron	ug/L	10000	9440	94	85-115	
Magnesium	ug/L	10000	9110	91	85-115	
Potassium	ug/L	10000	9500	95	85-115	
Sodium	ug/L	10000	9720	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1085508 1085509

Parameter	Units	60131762003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	209000	10000	10000	229000	227000	208	185	70-130	1	9	M1
Iron	ug/L	3670	10000	10000	13400	13400	97	97	70-130	0	10	
Magnesium	ug/L	18100	10000	10000	29000	28800	110	107	70-130	1	9	
Potassium	ug/L	61100	10000	10000	73100	72800	120	117	70-130	0	7	
Sodium	ug/L	11100	10000	10000	21800	21800	107	107	70-130	0	8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131762

QC Batch: MPRP/20130

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60131762001, 60131762002, 60131762003

METHOD BLANK: 1085499

Matrix: Water

Associated Lab Samples: 60131762001, 60131762002, 60131762003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	10/25/12 10:18	
Iron, Dissolved	ug/L	ND	50.0	10/25/12 10:18	
Lithium, Dissolved	ug/L	ND	10.0	10/25/12 10:18	
Magnesium, Dissolved	ug/L	ND	50.0	10/25/12 10:18	
Potassium, Dissolved	ug/L	186J	500	10/25/12 10:18	
Sodium, Dissolved	ug/L	ND	500	10/25/12 10:18	

LABORATORY CONTROL SAMPLE: 1085500

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9380	94	85-115	
Iron, Dissolved	ug/L	10000	9400	94	85-115	
Lithium, Dissolved	ug/L	1000	908	91	85-115	
Magnesium, Dissolved	ug/L	10000	9080	91	85-115	
Potassium, Dissolved	ug/L	10000	9400	94	85-115	
Sodium, Dissolved	ug/L	10000	9620	96	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1085501

1085502

Parameter	Units	60131762003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium, Dissolved	ug/L	215000	10000	10000	217000	216000	22	14	70-130	0	9	M1
Iron, Dissolved	ug/L	221	10000	10000	9620	9420	94	92	70-130	2	10	
Lithium, Dissolved	ug/L	120	1000	1000	1090	1070	97	95	70-130	2	20	
Magnesium, Dissolved	ug/L	18100	10000	10000	26400	26800	83	87	70-130	2	9	
Potassium, Dissolved	ug/L	62300	10000	10000	69600	69600	73	73	70-130	0	7	
Sodium, Dissolved	ug/L	11300	10000	10000	20900	20900	96	96	70-130	0	8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131762

QC Batch: MPRP/20133 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60131762001, 60131762002, 60131762003

METHOD BLANK: 1085514 Matrix: Water

Associated Lab Samples: 60131762001, 60131762002, 60131762003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	10/24/12 14:11	
Cadmium	ug/L	ND	0.50	10/24/12 14:11	
Chromium	ug/L	ND	1.0	10/24/12 14:11	
Cobalt	ug/L	ND	1.0	10/24/12 14:11	
Copper	ug/L	ND	1.0	10/24/12 14:11	
Lead	ug/L	ND	1.0	10/24/12 14:11	
Manganese	ug/L	ND	1.0	10/24/12 14:11	
Nickel	ug/L	ND	1.0	10/24/12 14:11	
Selenium	ug/L	ND	1.0	10/24/12 14:11	
Zinc	ug/L	ND	10.0	10/24/12 14:11	

LABORATORY CONTROL SAMPLE: 1085515

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	40.2	100	85-115	
Cadmium	ug/L	40	41.0	103	85-115	
Chromium	ug/L	40	41.2	103	85-115	
Cobalt	ug/L	40	39.4	99	85-115	
Copper	ug/L	40	39.6	99	85-115	
Lead	ug/L	40	39.8	100	85-115	
Manganese	ug/L	40	40.9	102	85-115	
Nickel	ug/L	40	39.8	100	85-115	
Selenium	ug/L	40	41.1	103	85-115	
Zinc	ug/L	100	110	110	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1085516 1085517

Parameter	Units	60131762003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	ND	40	40	41.6	41.2	103	102	70-130	1	20	
Cadmium	ug/L	15.4	40	40	55.4	56.6	100	103	70-130	2	20	
Chromium	ug/L	ND	40	40	40.8	39.6	102	99	70-130	3	20	
Cobalt	ug/L	2.5J	40	40	41.4	40.7	97	95	70-130	2	20	
Copper	ug/L	38.5	40	40	76.6	75.6	95	93	70-130	1	20	
Lead	ug/L	1.6J	40	40	41.1	40.5	99	97	70-130	2	20	
Manganese	ug/L	1790	40	40	1830	1820	99	69	70-130	1	20 M1	
Nickel	ug/L	3.3J	40	40	41.1	41.4	95	95	70-130	1	20	
Selenium	ug/L	ND	40	40	39.7	40.3	99	100	70-130	1	20	
Zinc	ug/L	3010	100	100	3120	3100	111	87	70-130	1	20	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131762

QC Batch: MPRP/20132 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60131762001, 60131762002, 60131762003

METHOD BLANK: 1085510 Matrix: Water

Associated Lab Samples: 60131762001, 60131762002, 60131762003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	10/24/12 14:49	
Cadmium, Dissolved	ug/L	ND	0.50	10/24/12 14:49	
Chromium, Dissolved	ug/L	ND	1.0	10/24/12 14:49	
Cobalt, Dissolved	ug/L	ND	1.0	10/24/12 14:49	
Copper, Dissolved	ug/L	ND	1.0	10/24/12 14:49	
Lead, Dissolved	ug/L	ND	1.0	10/24/12 14:49	
Manganese, Dissolved	ug/L	ND	1.0	10/24/12 14:49	
Nickel, Dissolved	ug/L	ND	1.0	10/24/12 14:49	
Selenium, Dissolved	ug/L	ND	1.0	10/24/12 14:49	
Zinc, Dissolved	ug/L	ND	10.0	10/24/12 14:49	

LABORATORY CONTROL SAMPLE: 1085511

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	39.4	99	85-115	
Cadmium, Dissolved	ug/L	40	40.7	102	85-115	
Chromium, Dissolved	ug/L	40	39.7	99	85-115	
Cobalt, Dissolved	ug/L	40	38.3	96	85-115	
Copper, Dissolved	ug/L	40	39.0	98	85-115	
Lead, Dissolved	ug/L	40	39.4	98	85-115	
Manganese, Dissolved	ug/L	40	39.9	100	85-115	
Nickel, Dissolved	ug/L	40	38.7	97	85-115	
Selenium, Dissolved	ug/L	40	40.3	101	85-115	
Zinc, Dissolved	ug/L	100	106	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1085512 1085513

Parameter	Units	60131762003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	ND	40	40	40.5	40.8	101	101	70-130	1	20	
Cadmium, Dissolved	ug/L	13.6	40	40	54.2	54.6	101	102	70-130	1	20	
Chromium, Dissolved	ug/L	ND	40	40	39.1	39.7	98	99	70-130	2	20	
Cobalt, Dissolved	ug/L	2.4J	40	40	40.0	40.7	94	96	70-130	2	20	
Copper, Dissolved	ug/L	3.1J	40	40	41.3	41.5	96	96	70-130	1	20	
Lead, Dissolved	ug/L	ND	40	40	38.8	39.4	97	98	70-130	1	20	
Manganese, Dissolved	ug/L	1760	40	40	1800	1790	110	81	70-130	1	20	
Nickel, Dissolved	ug/L	2.7J	40	40	40.7	42.0	95	98	70-130	3	20	
Selenium, Dissolved	ug/L	ND	40	40	40.4	40.1	101	100	70-130	1	20	
Zinc, Dissolved	ug/L	2810	100	100	2930	2940	123	128	70-130	0	20	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131762

QC Batch: WET/37847 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60131762001, 60131762002, 60131762003

METHOD BLANK: 1085480 Matrix: Water

Associated Lab Samples: 60131762001, 60131762002, 60131762003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	10/24/12 07:40	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	10/24/12 07:40	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	10/24/12 07:40	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	10/24/12 07:40	

LABORATORY CONTROL SAMPLE: 1085481

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	473	95	90-110	

SAMPLE DUPLICATE: 1085482

Parameter	Units	60131762003 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	110	110	0	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	110	110	0	9	

SAMPLE DUPLICATE: 1085483

Parameter	Units	60131701006 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	25400	25400	0	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	25400	25400	0	9	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Project No.: 60131762

QC Batch: WETA/22164 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60131762001, 60131762002, 60131762003

METHOD BLANK: 1085115 Matrix: Water

Associated Lab Samples: 60131762001, 60131762002, 60131762003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	10/23/12 11:48	
Chloride	mg/L	ND	1.0	10/23/12 11:48	
Fluoride	mg/L	ND	0.20	10/23/12 11:48	
Sulfate	mg/L	ND	1.0	10/23/12 11:48	

LABORATORY CONTROL SAMPLE: 1085116

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.0	100	90-110	
Chloride	mg/L	5	4.9	98	90-110	
Fluoride	mg/L	2.5	2.5	99	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1085117 1085118

Parameter	Units	60131762003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	0.26J	5	5	5.5	5.4	105	104	75-119	2	10	
Chloride	mg/L	1.2	5	5	5.8	5.7	92	90	64-118	2	12	
Fluoride	mg/L	2.2	2.5	2.5	4.7	4.7	101	100	75-110	1	10	
Sulfate	mg/L	643	500	500	1070	1090	86	89	61-119	1	10	

QUALIFIERS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131762

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131762

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60131762001	DR3A1210200900	EPA 200.7	MPRP/20131	EPA 200.7	ICP/16494
60131762002	DR3A1210210900	EPA 200.7	MPRP/20131	EPA 200.7	ICP/16494
60131762003	DR3A1210220900	EPA 200.7	MPRP/20131	EPA 200.7	ICP/16494
60131762001	DR3A1210200900	EPA 200.7	MPRP/20130	EPA 200.7	ICP/16493
60131762002	DR3A1210210900	EPA 200.7	MPRP/20130	EPA 200.7	ICP/16493
60131762003	DR3A1210220900	EPA 200.7	MPRP/20130	EPA 200.7	ICP/16493
60131762001	DR3A1210200900	EPA 200.8	MPRP/20133	EPA 200.8	ICPM/1760
60131762002	DR3A1210210900	EPA 200.8	MPRP/20133	EPA 200.8	ICPM/1760
60131762003	DR3A1210220900	EPA 200.8	MPRP/20133	EPA 200.8	ICPM/1760
60131762001	DR3A1210200900	EPA 200.8	MPRP/20132	EPA 200.8	ICPM/1759
60131762002	DR3A1210210900	EPA 200.8	MPRP/20132	EPA 200.8	ICPM/1759
60131762003	DR3A1210220900	EPA 200.8	MPRP/20132	EPA 200.8	ICPM/1759
60131762001	DR3A1210200900	SM 2320B	WET/37847		
60131762002	DR3A1210210900	SM 2320B	WET/37847		
60131762003	DR3A1210220900	SM 2320B	WET/37847		
60131762001	DR3A1210200900	EPA 300.0	WETA/22164		
60131762002	DR3A1210210900	EPA 300.0	WETA/22164		
60131762003	DR3A1210220900	EPA 300.0	WETA/22164		

October 26, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60131827

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on October 24, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Colleen Clyne for
Heather Wilson
heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131827

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131827

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60131827001	DR3A1210230900	Water	10/23/12 09:00	10/24/12 10:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131827

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60131827001	DR3A1210230900	EPA 200.7	TDS	5
		EPA 200.7	TDS	6
		EPA 200.8	JGP	10
		EPA 200.8	JGP	10
		SM 2320B	DJR	4
		EPA 300.0	AJM	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60131827

Method: EPA 200.7
Description: 200.7 Metals, Total
Client: BP AMEC
Date: October 26, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20157

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60131827001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1086250)
 - Calcium
- MSD (Lab ID: 1086251)
 - Calcium

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20157

B: Analyte was detected in the associated method blank.

- DR3A1210230900 (Lab ID: 60131827001)
 - Potassium

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131827

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: October 26, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20156

B: Analyte was detected in the associated method blank.

- DR3A1210230900 (Lab ID: 60131827001)
- Potassium, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60131827

Method: EPA 200.8
Description: 200.8 MET ICPMS
Client: BP AMEC
Date: October 26, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20159

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60131827001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1086266)
 - Manganese
 - Zinc
- MSD (Lab ID: 1086267)
 - Manganese
 - Zinc

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131827

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: October 26, 2012

Analyte Comments:

QC Batch: MPRP/20159

B: Analyte was detected in the associated method blank.

- DR3A1210230900 (Lab ID: 60131827001)
 - Manganese
 - Zinc

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210230900 (Lab ID: 60131827001)
 - Arsenic
 - Chromium
 - Selenium

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60131827

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: October 26, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20158

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60131827001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1086262)
 - Manganese, Dissolved
 - Zinc, Dissolved
- MSD (Lab ID: 1086263)
 - Manganese, Dissolved
 - Zinc, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131827

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: October 26, 2012

Analyte Comments:

QC Batch: MPRP/20158

B: Analyte was detected in the associated method blank.

- DR3A1210230900 (Lab ID: 60131827001)
 - Manganese, Dissolved
 - Zinc, Dissolved

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210230900 (Lab ID: 60131827001)
 - Arsenic, Dissolved
 - Chromium, Dissolved
 - Selenium, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131827

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: October 26, 2012

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131827

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: October 26, 2012

General Information:

1 sample was analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131827

Sample: DR3A1210230900 Lab ID: 60131827001 Collected: 10/23/12 09:00 Received: 10/24/12 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	208000	ug/L	100	35.8	1	10/24/12 17:00	10/25/12 11:39	7440-70-2	M1
Iron	3600	ug/L	50.0	17.2	1	10/24/12 17:00	10/25/12 11:39	7439-89-6	
Magnesium	18100	ug/L	50.0	17.2	1	10/24/12 17:00	10/25/12 11:39	7439-95-4	
Potassium	59900	ug/L	500	64.1	1	10/24/12 17:00	10/25/12 11:39	7440-09-7	B
Sodium	10800	ug/L	500	40.1	1	10/24/12 17:00	10/25/12 11:39	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	212000	ug/L	100	35.8	1	10/24/12 17:00	10/25/12 11:59	7440-70-2	D9
Iron, Dissolved	81.1	ug/L	50.0	17.2	1	10/24/12 17:00	10/25/12 11:59	7439-89-6	
Lithium, Dissolved	110	ug/L	10.0	3.7	1	10/24/12 17:00	10/25/12 11:59	7439-93-2	
Magnesium, Dissolved	18500	ug/L	50.0	17.2	1	10/24/12 17:00	10/25/12 11:59	7439-95-4	D9
Potassium, Dissolved	61300	ug/L	500	64.1	1	10/24/12 17:00	10/25/12 11:59	7440-09-7	B,D9
Sodium, Dissolved	11100	ug/L	500	40.1	1	10/24/12 17:00	10/25/12 11:59	7440-23-5	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	ND	ug/L	5.0	0.70	5	10/24/12 17:00	10/25/12 12:51	7440-38-2	D3
Cadmium	14.7	ug/L	2.5	0.48	5	10/24/12 17:00	10/25/12 12:51	7440-43-9	
Chromium	ND	ug/L	5.0	0.55	5	10/24/12 17:00	10/25/12 12:51	7440-47-3	D3
Cobalt	2.5J	ug/L	5.0	0.24	5	10/24/12 17:00	10/25/12 12:51	7440-48-4	
Copper	36.6	ug/L	5.0	2.2	5	10/24/12 17:00	10/25/12 12:51	7440-50-8	
Lead	1.7J	ug/L	5.0	0.26	5	10/24/12 17:00	10/25/12 12:51	7439-92-1	
Manganese	1690	ug/L	5.0	1.2	5	10/24/12 17:00	10/25/12 12:51	7439-96-5	B,M1
Nickel	2.5J	ug/L	5.0	1.8	5	10/24/12 17:00	10/25/12 12:51	7440-02-0	
Selenium	ND	ug/L	5.0	1.8	5	10/24/12 17:00	10/25/12 12:51	7782-49-2	D3
Zinc	2830	ug/L	50.0	8.0	5	10/24/12 17:00	10/25/12 12:51	7440-66-6	B,M1
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	5.0	0.70	5	10/24/12 17:00	10/25/12 13:16	7440-38-2	D3
Cadmium, Dissolved	14.6	ug/L	2.5	0.48	5	10/24/12 17:00	10/25/12 13:16	7440-43-9	
Chromium, Dissolved	ND	ug/L	5.0	0.55	5	10/24/12 17:00	10/25/12 13:16	7440-47-3	D3
Cobalt, Dissolved	2.6J	ug/L	5.0	0.24	5	10/24/12 17:00	10/25/12 13:16	7440-48-4	
Copper, Dissolved	3.7J	ug/L	5.0	2.2	5	10/24/12 17:00	10/25/12 13:16	7440-50-8	
Lead, Dissolved	ND	ug/L	5.0	0.26	5	10/24/12 17:00	10/25/12 13:16	7439-92-1	
Manganese, Dissolved	1790	ug/L	5.0	1.2	5	10/24/12 17:00	10/25/12 13:16	7439-96-5	B,D9, M1
Nickel, Dissolved	2.6J	ug/L	5.0	1.8	5	10/24/12 17:00	10/25/12 13:16	7440-02-0	
Selenium, Dissolved	ND	ug/L	5.0	1.8	5	10/24/12 17:00	10/25/12 13:16	7782-49-2	D3
Zinc, Dissolved	2840	ug/L	50.0	8.0	5	10/24/12 17:00	10/25/12 13:16	7440-66-6	B,D9, M1
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	109	mg/L	20.0	1.2	1		10/25/12 09:08		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		10/25/12 09:08		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		10/25/12 09:08		
Alkalinity, Total as CaCO3	109	mg/L	20.0	1.2	1		10/25/12 09:08		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131827

Sample: DR3A1210230900		Lab ID: 60131827001		Collected: 10/23/12 09:00		Received: 10/24/12 10:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.27J	mg/L	1.0	0.078	1		10/25/12 19:23	24959-67-9	
Chloride	1.2	mg/L	1.0	0.50	1		10/25/12 19:23	16887-00-6	
Fluoride	2.3	mg/L	0.20	0.011	1		10/25/12 19:23	16984-48-8	
Sulfate	642	mg/L	100	12.0	100		10/25/12 19:41	14808-79-8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131827

QC Batch: MPRP/20157

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60131827001

METHOD BLANK: 1086248

Matrix: Water

Associated Lab Samples: 60131827001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	ug/L	ND	100	10/25/12 11:25	
Iron	ug/L	ND	50.0	10/25/12 11:25	
Magnesium	ug/L	ND	50.0	10/25/12 11:25	
Potassium	ug/L	303J	500	10/25/12 11:25	
Sodium	ug/L	ND	500	10/25/12 11:25	

LABORATORY CONTROL SAMPLE: 1086249

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	9320	93	85-115	
Iron	ug/L	10000	9200	92	85-115	
Magnesium	ug/L	10000	9180	92	85-115	
Potassium	ug/L	10000	9350	93	85-115	
Sodium	ug/L	10000	9450	94	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1086250 1086251

Parameter	Units	60131827001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	208000	10000	10000	222000	223000	148	156	70-130	0	9	M1
Iron	ug/L	3600	10000	10000	13100	13300	95	97	70-130	2	10	
Magnesium	ug/L	18100	10000	10000	28700	28700	106	105	70-130	0	9	
Potassium	ug/L	59900	10000	10000	70000	71000	101	110	70-130	1	7	
Sodium	ug/L	10800	10000	10000	20900	21300	101	105	70-130	2	8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131827

QC Batch: MPRP/20156

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60131827001

METHOD BLANK: 1086239

Matrix: Water

Associated Lab Samples: 60131827001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	10/25/12 11:52	
Iron, Dissolved	ug/L	ND	50.0	10/25/12 11:52	
Lithium, Dissolved	ug/L	ND	10.0	10/25/12 11:52	
Magnesium, Dissolved	ug/L	ND	50.0	10/25/12 11:52	
Potassium, Dissolved	ug/L	296J	500	10/25/12 11:52	
Sodium, Dissolved	ug/L	ND	500	10/25/12 11:52	

LABORATORY CONTROL SAMPLE: 1086240

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9780	98	85-115	
Iron, Dissolved	ug/L	10000	9720	97	85-115	
Lithium, Dissolved	ug/L	1000	919	92	85-115	
Magnesium, Dissolved	ug/L	10000	9770	98	85-115	
Potassium, Dissolved	ug/L	10000	9790	98	85-115	
Sodium, Dissolved	ug/L	10000	9940	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1086241

1086242

Parameter	Units	60131827001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Calcium, Dissolved	ug/L	212000	10000	10000	224000	221000	118	91	70-130	1	9
Iron, Dissolved	ug/L	81.1	10000	10000	9710	9620	96	95	70-130	1	10
Lithium, Dissolved	ug/L	110	1000	1000	1070	1070	96	96	70-130	0	20
Magnesium, Dissolved	ug/L	18500	10000	10000	28600	28400	102	100	70-130	1	9
Potassium, Dissolved	ug/L	61300	10000	10000	71100	70600	98	94	70-130	1	7
Sodium, Dissolved	ug/L	11100	10000	10000	21400	21400	102	102	70-130	0	8

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131827

QC Batch:	MPRP/20159	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET
Associated Lab Samples:	60131827001		

METHOD BLANK: 1086264 Matrix: Water

Associated Lab Samples: 60131827001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	10/25/12 12:33	
Cadmium	ug/L	ND	0.50	10/25/12 12:33	
Chromium	ug/L	ND	1.0	10/25/12 12:33	
Cobalt	ug/L	ND	1.0	10/25/12 12:33	
Copper	ug/L	ND	1.0	10/25/12 12:33	
Lead	ug/L	ND	1.0	10/25/12 12:33	
Manganese	ug/L	0.69J	1.0	10/25/12 12:33	
Nickel	ug/L	ND	1.0	10/25/12 12:33	
Selenium	ug/L	ND	1.0	10/25/12 12:33	
Zinc	ug/L	3.8J	10.0	10/25/12 12:33	

LABORATORY CONTROL SAMPLE: 1086265

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	39.6	99	85-115	
Cadmium	ug/L	40	41.0	102	85-115	
Chromium	ug/L	40	39.9	100	85-115	
Cobalt	ug/L	40	38.6	97	85-115	
Copper	ug/L	40	39.3	98	85-115	
Lead	ug/L	40	39.8	100	85-115	
Manganese	ug/L	40	40.8	102	85-115	
Nickel	ug/L	40	38.7	97	85-115	
Selenium	ug/L	40	40.4	101	85-115	
Zinc	ug/L	100	107	107	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1086266 1086267

Parameter	Units	60131827001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	ND	40	40	40.3	38.9	100	96	70-130	4	20	
Cadmium	ug/L	14.7	40	40	54.0	52.9	98	96	70-130	2	20	
Chromium	ug/L	ND	40	40	39.7	38.0	99	94	70-130	4	20	
Cobalt	ug/L	2.5J	40	40	40.6	39.2	95	92	70-130	4	20	
Copper	ug/L	36.6	40	40	74.3	71.8	94	88	70-130	3	20	
Lead	ug/L	1.7J	40	40	40.7	39.2	97	94	70-130	4	20	
Manganese	ug/L	1690	40	40	1680	1660	-6	-51	70-130	1	20 M1	
Nickel	ug/L	2.5J	40	40	40.3	39.1	94	92	70-130	3	20	
Selenium	ug/L	ND	40	40	38.4	37.0	96	92	70-130	4	20	
Zinc	ug/L	2830	100	100	2840	2820	5	-16	70-130	1	20 M1	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131827

QC Batch: MPRP/20158

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60131827001

METHOD BLANK: 1086260

Matrix: Water

Associated Lab Samples: 60131827001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	10/25/12 11:09	
Cadmium, Dissolved	ug/L	ND	0.50	10/25/12 11:09	
Chromium, Dissolved	ug/L	ND	1.0	10/25/12 11:09	
Cobalt, Dissolved	ug/L	ND	1.0	10/25/12 11:09	
Copper, Dissolved	ug/L	ND	1.0	10/25/12 11:09	
Lead, Dissolved	ug/L	ND	1.0	10/25/12 11:09	
Manganese, Dissolved	ug/L	0.57J	1.0	10/25/12 11:09	
Nickel, Dissolved	ug/L	ND	1.0	10/25/12 11:09	
Selenium, Dissolved	ug/L	ND	1.0	10/25/12 11:09	
Zinc, Dissolved	ug/L	7.8J	10.0	10/25/12 11:09	

LABORATORY CONTROL SAMPLE: 1086261

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	40.2	100	85-115	
Cadmium, Dissolved	ug/L	40	40.9	102	85-115	
Chromium, Dissolved	ug/L	40	40.3	101	85-115	
Cobalt, Dissolved	ug/L	40	39.0	98	85-115	
Copper, Dissolved	ug/L	40	39.5	99	85-115	
Lead, Dissolved	ug/L	40	40.2	100	85-115	
Manganese, Dissolved	ug/L	40	41.1	103	85-115	
Nickel, Dissolved	ug/L	40	39.8	100	85-115	
Selenium, Dissolved	ug/L	40	40.4	101	85-115	
Zinc, Dissolved	ug/L	100	108	108	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1086262 1086263

Parameter	Units	60131827001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	ND	40	40	40.4	40.6	100	101	70-130	1	20	
Cadmium, Dissolved	ug/L	14.6	40	40	54.4	53.7	99	98	70-130	1	20	
Chromium, Dissolved	ug/L	ND	40	40	40.1	40.2	100	100	70-130	0	20	
Cobalt, Dissolved	ug/L	2.6J	40	40	41.2	40.8	97	96	70-130	1	20	
Copper, Dissolved	ug/L	3.7J	40	40	41.6	41.8	95	95	70-130	0	20	
Lead, Dissolved	ug/L	ND	40	40	39.4	39.4	98	98	70-130	0	20	
Manganese, Dissolved	ug/L	1790	40	40	1760	1750	-68	-88	70-130	0	20 M1	
Nickel, Dissolved	ug/L	2.6J	40	40	41.5	41.1	97	96	70-130	1	20	
Selenium, Dissolved	ug/L	ND	40	40	40.6	39.9	101	100	70-130	2	20	
Zinc, Dissolved	ug/L	2840	100	100	2820	2810	-25	-32	70-130	0	20 M1	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131827

QC Batch: WET/37879

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60131827001

METHOD BLANK: 1086447

Matrix: Water

Associated Lab Samples: 60131827001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	10/25/12 08:58	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	10/25/12 08:58	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	10/25/12 08:58	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	10/25/12 08:58	

LABORATORY CONTROL SAMPLE: 1086448

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	480	96	90-110	

SAMPLE DUPLICATE: 1086449

Parameter	Units	60131827001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	109	110	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	109	110	1	9	

SAMPLE DUPLICATE: 1086450

Parameter	Units	60131713014 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	99.1	101	2	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	99.1	101	2	9	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131827

QC Batch: WETA/22199

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60131827001

METHOD BLANK: 1086675

Matrix: Water

Associated Lab Samples: 60131827001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	10/25/12 11:43	
Chloride	mg/L	ND	1.0	10/25/12 11:43	
Fluoride	mg/L	ND	0.20	10/25/12 11:43	
Sulfate	mg/L	ND	1.0	10/25/12 11:43	

LABORATORY CONTROL SAMPLE: 1086676

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.9	99	90-110	
Chloride	mg/L	5	4.9	98	90-110	
Fluoride	mg/L	2.5	2.4	98	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE SAMPLE: 1086677

Parameter	Units	60131288001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	5	5.2	104	75-119	
Chloride	mg/L	2.6	5	7.3	94	64-118	
Fluoride	mg/L	0.24	2.5	2.9	107	75-110	
Sulfate	mg/L	15.5	5	20.1	93	61-119	

MATRIX SPIKE SAMPLE: 1086678

Parameter	Units	60131827001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	0.27J	5	5.4	102	75-119	
Chloride	mg/L	1.2	5	5.7	90	64-118	
Fluoride	mg/L	2.3	2.5	4.7	94	75-110	
Sulfate	mg/L	642	500	1100	91	61-119	

QUALIFIERS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131827

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60131827

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60131827001	DR3A1210230900	EPA 200.7	MPRP/20157	EPA 200.7	ICP/16511
60131827001	DR3A1210230900	EPA 200.7	MPRP/20156	EPA 200.7	ICP/16510
60131827001	DR3A1210230900	EPA 200.8	MPRP/20159	EPA 200.8	ICPM/1766
60131827001	DR3A1210230900	EPA 200.8	MPRP/20158	EPA 200.8	ICPM/1764
60131827001	DR3A1210230900	SM 2320B	WET/37879		
60131827001	DR3A1210230900	EPA 300.0	WETA/22199		

November 13, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: Rico-Argentine Mine Site
Pace Project No.: 60132054

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on October 26, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Rico-Argentine Mine Site

Pace Project No.: 60132054

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Rico-Argentine Mine Site

Pace Project No.: 60132054

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60132045002	DR3A1210240600	Water	10/24/12 06:00	10/26/12 10:00
60132045006	DR3A1210250600	Water	10/24/12 06:00	10/26/12 10:00
60132054004	DR3A1210240600 RE	Water	10/24/12 06:00	10/26/12 10:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Rico-Argentine Mine Site

Pace Project No.: 60132054

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60132045002	DR3A1210240600	EPA 200.7	SMW	1
		EPA 200.8	JGP	4
		EPA 200.8	JGP	4
		SM 2320B	DJR	4
60132045006	DR3A1210250600	EPA 200.7	SMW	1
		EPA 200.8	JGP	4
		EPA 200.8	JGP	4
		SM 2320B	DJR	4
60132054004	DR3A1210240600 RE	EPA 200.8	SMW	2

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60132054

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: November 13, 2012

General Information:

2 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60132054

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 13, 2012

General Information:

2 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20197

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60132045002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1087850)
 - Manganese
 - Zinc
- MSD (Lab ID: 1087851)
 - Manganese
 - Zinc

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60132054

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: November 13, 2012

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20196

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60132044001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1087844)
 - Manganese, Dissolved
 - Zinc, Dissolved
- MSD (Lab ID: 1087845)
 - Manganese, Dissolved
 - Zinc, Dissolved

QC Batch: MPRP/20356

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60132677001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1094300)
 - Manganese, Dissolved
- MSD (Lab ID: 1094301)
 - Manganese, Dissolved

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60132054

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: November 13, 2012

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20196

B: Analyte was detected in the associated method blank.

- DR3A1210250600 (Lab ID: 60132045006)
- Iron, Dissolved

QC Batch: MPRP/20356

1e: Result was revised

- DR3A1210240600 RE (Lab ID: 60132054004)
- Cadmium, Dissolved
- Manganese, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60132054

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: November 13, 2012

General Information:

2 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60132054

Sample: DR3A1210240600		Lab ID: 60132045002		Collected: 10/24/12 06:00		Received: 10/26/12 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Potassium	67800	ug/L	500	64.1	1	10/26/12 17:30	10/27/12 12:13	7440-09-7	
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Cadmium	14.2	ug/L	2.5	0.48	5	10/26/12 17:30	10/30/12 13:15	7440-43-9	
Iron	4170	ug/L	250	23.0	5	10/26/12 17:30	10/30/12 13:15	7439-89-6	
Manganese	1730	ug/L	5.0	1.2	5	10/26/12 17:30	10/30/12 13:15	7439-96-5	M1
Zinc	2890	ug/L	50.0	8.0	5	10/26/12 17:30	10/30/12 13:15	7440-66-6	M1
200.8 MET ICPMS, Dissolved		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Cadmium, Dissolved	22.6	ug/L	2.5	0.48	5	10/26/12 17:30	10/30/12 14:00	7440-43-9	
Iron, Dissolved	320	ug/L	250	23.0	5	10/26/12 17:30	10/30/12 14:00	7439-89-6	
Manganese, Dissolved	1920	ug/L	5.0	1.2	5	10/26/12 17:30	10/30/12 14:00	7439-96-5	D9
Zinc, Dissolved	2960	ug/L	50.0	8.0	5	10/26/12 17:30	10/30/12 14:00	7440-66-6	D9
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	115	mg/L	20.0	1.2	1		10/29/12 09:44		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/29/12 09:44		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/29/12 09:44		
Alkalinity, Total as CaCO ₃	115	mg/L	20.0	1.2	1		10/29/12 09:44		

ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60132054

Sample: DR3A1210250600 Lab ID: 60132045006 Collected: 10/24/12 06:00 Received: 10/26/12 10:00 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Potassium	61800	ug/L	500	64.1	1	10/26/12 17:30	10/27/12 12:16	7440-09-7	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Cadmium	14.8	ug/L	2.5	0.48	5	10/26/12 17:30	10/30/12 13:40	7440-43-9	
Iron	4530	ug/L	250	23.0	5	10/26/12 17:30	10/30/12 13:40	7439-89-6	
Manganese	1720	ug/L	5.0	1.2	5	10/26/12 17:30	10/30/12 13:40	7439-96-5	
Zinc	2920	ug/L	50.0	8.0	5	10/26/12 17:30	10/30/12 13:40	7440-66-6	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Cadmium, Dissolved	13.6	ug/L	2.5	0.48	5	10/26/12 17:30	10/30/12 14:04	7440-43-9	
Iron, Dissolved	27.0J	ug/L	250	23.0	5	10/26/12 17:30	10/30/12 14:04	7439-89-6	B
Manganese, Dissolved	1720	ug/L	5.0	1.2	5	10/26/12 17:30	10/30/12 14:04	7439-96-5	
Zinc, Dissolved	2750	ug/L	50.0	8.0	5	10/26/12 17:30	10/30/12 14:04	7440-66-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	107	mg/L	20.0	1.2	1		10/29/12 09:48		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/29/12 09:48		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/29/12 09:48		
Alkalinity, Total as CaCO ₃	107	mg/L	20.0	1.2	1		10/29/12 09:48		

ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60132054

Sample: DR3A1210240600 RE		Lab ID: 60132054004	Collected: 10/24/12 06:00	Received: 10/26/12 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Cadmium, Dissolved	13.1	ug/L	2.5	0.48	5	11/07/12 12:20	11/09/12 17:29	7440-43-9	1e
Manganese, Dissolved	1690	ug/L	5.0	1.2	5	11/07/12 12:20	11/09/12 17:29	7439-96-5	1e

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60132054

QC Batch: MPRP/20195

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60132045002, 60132045006

METHOD BLANK: 1087838

Matrix: Water

Associated Lab Samples: 60132045002, 60132045006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Potassium	ug/L	ND	500	10/27/12 11:57	

LABORATORY CONTROL SAMPLE: 1087839

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Potassium	ug/L	10000	9780	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1087840 1087841

Parameter	Units	60132044001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Potassium	ug/L	63700	10000	10000	76100	72700	124	90	70-130	4	7	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60132054

QC Batch:	MPRP/20197	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET
Associated Lab Samples: 60132045002, 60132045006			

METHOD BLANK: 1087848 Matrix: Water

Associated Lab Samples: 60132045002, 60132045006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium	ug/L	ND	0.50	10/30/12 12:50	
Iron	ug/L	6.3J	50.0	10/30/12 12:50	
Manganese	ug/L	0.32J	1.0	10/30/12 12:50	
Zinc	ug/L	2.5J	10.0	10/30/12 12:50	

LABORATORY CONTROL SAMPLE: 1087849

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	40	41.5	104	85-115	
Iron	ug/L	1000	1040	104	85-115	
Manganese	ug/L	40	40.9	102	85-115	
Zinc	ug/L	100	113	113	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1087850 1087851

Parameter	Units	60132045002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium	ug/L	14.2	40	40	55.6	54.0	104	100	70-130	3	20	
Iron	ug/L	4170	1000	1000	5250	5100	108	93	70-130	3	20	
Manganese	ug/L	1730	40	40	1760	1730	65	4	70-130	1	20 M1	
Zinc	ug/L	2890	100	100	2950	2910	66	22	70-130	2	20 M1	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60132054

QC Batch: MPRP/20196

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60132045002, 60132045006

METHOD BLANK: 1087842

Matrix: Water

Associated Lab Samples: 60132045002, 60132045006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium, Dissolved	ug/L	ND	0.50	10/30/12 12:50	
Iron, Dissolved	ug/L	6.3J	50.0	10/30/12 12:50	
Manganese, Dissolved	ug/L	0.32J	1.0	10/30/12 12:50	
Zinc, Dissolved	ug/L	2.5J	10.0	10/30/12 12:50	

LABORATORY CONTROL SAMPLE: 1087843

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium, Dissolved	ug/L	40	41.5	104	85-115	
Iron, Dissolved	ug/L	1000	1040	104	85-115	
Manganese, Dissolved	ug/L	40	40.9	102	85-115	
Zinc, Dissolved	ug/L	100	113	113	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1087844

1087845

Parameter	Units	60132044001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium, Dissolved	ug/L	9.6	40	40	49.7	42.3	100	82	70-130	16	20	
Iron, Dissolved	ug/L	1540	1000	1000	1020	873	100	86	70-130	15	20	
Manganese, Dissolved	ug/L	1440	40	40	1410	1250	-79	-462	70-130	12	20 M1	
Zinc, Dissolved	ug/L	1850	100	100	1870	1660	14	-190	70-130	12	20 M1	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60132054

QC Batch:	MPRP/20356	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET Dissolved
Associated Lab Samples:	60132054004		

METHOD BLANK: 1094298 Matrix: Water
Associated Lab Samples: 60132054004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium, Dissolved	ug/L	ND	0.50	11/09/12 17:21	
Manganese, Dissolved	ug/L	ND	1.0	11/09/12 17:21	

LABORATORY CONTROL SAMPLE: 1094299

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium, Dissolved	ug/L	40	41.0	103	85-115	
Manganese, Dissolved	ug/L	40	39.0	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1094300 1094301

Parameter	Units	60132677001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium, Dissolved	ug/L	13.7	40	40	52.4	53.6	97	100	70-130	2	20	
Manganese, Dissolved	ug/L	1690	40	40	1710	1700	56	29	70-130	1	20 M1	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60132054

QC Batch: WET/37940

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60132045002, 60132045006

METHOD BLANK: 1089027

Matrix: Water

Associated Lab Samples: 60132045002, 60132045006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	10/29/12 09:24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	10/29/12 09:24	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	10/29/12 09:24	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	10/29/12 09:24	

LABORATORY CONTROL SAMPLE: 1089028

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	494	99	90-110	

SAMPLE DUPLICATE: 1089029

Parameter	Units	60131933014 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	118	114	4	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	118	114	4	9	

SAMPLE DUPLICATE: 1089030

Parameter	Units	60132033002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	310	317	2	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	310	317	2	9	

QUALIFIERS

Project: Rico-Argentine Mine Site

Pace Project No.: 60132054

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

1e Result was revised

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rico-Argentine Mine Site

Pace Project No.: 60132054

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60132045002	DR3A1210240600	EPA 200.7	MPRP/20195	EPA 200.7	ICP/16526
60132045006	DR3A1210250600	EPA 200.7	MPRP/20195	EPA 200.7	ICP/16526
60132045002	DR3A1210240600	EPA 200.8	MPRP/20197	EPA 200.8	ICPM/1776
60132045006	DR3A1210250600	EPA 200.8	MPRP/20197	EPA 200.8	ICPM/1776
60132045002	DR3A1210240600	EPA 200.8	MPRP/20196	EPA 200.8	ICPM/1775
60132045006	DR3A1210250600	EPA 200.8	MPRP/20196	EPA 200.8	ICPM/1775
60132054004	DR3A1210240600 RE	EPA 200.8	MPRP/20356	EPA 200.8	ICPM/1811
60132045002	DR3A1210240600	SM 2320B	WET/37940		
60132045006	DR3A1210250600	SM 2320B	WET/37940		

October 31, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: Rico-Argentine Mine Site
Pace Project No.: 60132155

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on October 27, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Rico-Argentine Mine Site

Pace Project No.: 60132155

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Rico-Argentine Mine Site

Pace Project No.: 60132155

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60132155001	DR3A1210260600	Water	10/26/12 06:00	10/27/12 09:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Rico-Argentine Mine Site

Pace Project No.: 60132155

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60132155001	DR3A1210260600	EPA 200.7	SMW	1
		EPA 200.8	JGP	4
		EPA 200.8	JGP	4
		SM 2320B	DJR	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60132155

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: October 31, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20218

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60132155001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1089041)
 - Potassium
- MSD (Lab ID: 1089042)
 - Potassium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

Page 5 of 15

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60132155

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: October 31, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20220

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60132155001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1089049)
 - Cadmium
 - Iron
 - Manganese
 - Zinc
- MSD (Lab ID: 1089050)
 - Cadmium
 - Iron
 - Manganese
 - Zinc

Additional Comments:

REPORT OF LABORATORY ANALYSIS

Page 6 of 15

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60132155

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: October 31, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20219

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60132155001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1089045)
 - Manganese, Dissolved
 - Zinc, Dissolved
- MSD (Lab ID: 1089046)
 - Manganese, Dissolved
 - Zinc, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60132155

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: October 31, 2012

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60132155

Sample: DR3A1210260600 Lab ID: 60132155001 Collected: 10/26/12 06:00 Received: 10/27/12 09:00 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Potassium	68200	ug/L	500	64.1	1	10/29/12 09:00	10/29/12 14:43	7440-09-7	M1
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Cadmium	15.0	ug/L	2.5	0.48	5	10/28/12 09:00	10/30/12 14:13	7440-43-9	M1
Iron	3710	ug/L	250	23.0	5	10/28/12 09:00	10/30/12 14:13	7439-89-6	M1
Manganese	1790	ug/L	5.0	1.2	5	10/28/12 09:00	10/30/12 14:13	7439-96-5	M1
Zinc	2930	ug/L	50.0	8.0	5	10/28/12 09:00	10/30/12 14:13	7440-66-6	M1
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Cadmium, Dissolved	13.4	ug/L	2.5	0.48	5	10/29/12 09:00	10/30/12 14:42	7440-43-9	
Iron, Dissolved	75.4J	ug/L	250	23.0	5	10/29/12 09:00	10/30/12 14:42	7439-89-6	
Manganese, Dissolved	1660	ug/L	5.0	1.2	5	10/29/12 09:00	10/30/12 14:42	7439-96-5	M1
Zinc, Dissolved	2620	ug/L	50.0	8.0	5	10/29/12 09:00	10/30/12 14:42	7440-66-6	M1
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	121	mg/L	20.0	1.2	1		10/29/12 09:52		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/29/12 09:52		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/29/12 09:52		
Alkalinity, Total as CaCO ₃	121	mg/L	20.0	1.2	1		10/29/12 09:52		

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60132155

QC Batch: MPRP/20218

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60132155001

METHOD BLANK: 1089039

Matrix: Water

Associated Lab Samples: 60132155001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Potassium	ug/L	ND	500	10/29/12 14:36	

LABORATORY CONTROL SAMPLE: 1089040

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Potassium	ug/L	10000	9590	96	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1089041

1089042

Parameter	Units	60132155001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Potassium	ug/L	68200	10000	10000	73600	73700	54	55	70-130	0	7	M1

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60132155

QC Batch:	MPRP/20220	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET
Associated Lab Samples:	60132155001		

METHOD BLANK: 1089047 Matrix: Water
Associated Lab Samples: 60132155001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium	ug/L	ND	0.50	10/30/12 14:29	
Iron	ug/L	ND	50.0	10/30/12 14:29	
Manganese	ug/L	ND	1.0	10/30/12 14:29	
Zinc	ug/L	1.7J	10.0	10/30/12 14:29	

LABORATORY CONTROL SAMPLE: 1089048

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	40	41.8	104	85-115	
Iron	ug/L	1000	1040	104	85-115	
Manganese	ug/L	40	42.1	105	85-115	
Zinc	ug/L	100	111	111	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1089049 1089050

Parameter	Units	60132155001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium	ug/L	15.0	20	20	54.2	54.6	196	198	70-130	1	20	M1
Iron	ug/L	3710	500	500	4580	4520	175	163	70-130	1	20	M1
Manganese	ug/L	1790	20	20	1760	1730	-110	-295	70-130	2	20	M1
Zinc	ug/L	2930	50	50	2920	2860	-20	-143	70-130	2	20	M1

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60132155

QC Batch:	MPRP/20219	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET Dissolved
Associated Lab Samples:	60132155001		

METHOD BLANK: 1089043 Matrix: Water
Associated Lab Samples: 60132155001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium, Dissolved	ug/L	ND	0.50	10/30/12 14:29	
Iron, Dissolved	ug/L	ND	50.0	10/30/12 14:29	
Manganese, Dissolved	ug/L	ND	1.0	10/30/12 14:29	
Zinc, Dissolved	ug/L	1.7J	10.0	10/30/12 14:29	

LABORATORY CONTROL SAMPLE: 1089044

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium, Dissolved	ug/L	40	41.8	104	85-115	
Iron, Dissolved	ug/L	1000	1040	104	85-115	
Manganese, Dissolved	ug/L	40	42.1	105	85-115	
Zinc, Dissolved	ug/L	100	111	111	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1089045 1089046

Parameter	Units	60132155001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium, Dissolved	ug/L	13.4	40	40	54.2	53.6	102	101	70-130	1	20	
Iron, Dissolved	ug/L	75.4J	1000	1000	1060	1070	99	100	70-130	1	20	
Manganese, Dissolved	ug/L	1660	40	40	1770	1770	281	262	70-130	0	20 M1	
Zinc, Dissolved	ug/L	2620	100	100	2820	2820	202	206	70-130	0	20 M1	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60132155

QC Batch: WET/37940

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60132155001

METHOD BLANK: 1089027

Matrix: Water

Associated Lab Samples: 60132155001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	10/29/12 09:24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	10/29/12 09:24	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	10/29/12 09:24	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	10/29/12 09:24	

LABORATORY CONTROL SAMPLE: 1089028

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	494	99	90-110	

SAMPLE DUPLICATE: 1089029

Parameter	Units	60131933014 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	118	114	4	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	118	114	4	9	

SAMPLE DUPLICATE: 1089030

Parameter	Units	60132033002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	310	317	2	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	310	317	2	9	

QUALIFIERS

Project: Rico-Argentine Mine Site

Pace Project No.: 60132155

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rico-Argentine Mine Site

Pace Project No.: 60132155

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60132155001	DR3A1210260600	EPA 200.7	MPRP/20218	EPA 200.7	ICP/16537
60132155001	DR3A1210260600	EPA 200.8	MPRP/20220	EPA 200.8	ICPM/1785
60132155001	DR3A1210260600	EPA 200.8	MPRP/20219	EPA 200.8	ICPM/1784
60132155001	DR3A1210260600	SM 2320B	WET/37940		

November 01, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60132229

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on October 30, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132229

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132229

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60132229001	DR3A1210280600	Water	10/28/12 06:00	10/30/12 10:25

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132229

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60132229001	DR3A1210280600	EPA 200.7	SMW	5
		EPA 200.7	SMW	6
		EPA 200.8	JGP	10
		EPA 200.8	JGP	10
		SM 2320B	DJR	4
		EPA 300.0	AJM	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132229

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: November 01, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20259

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60132230002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1090005)
 - Calcium
 - Potassium
- MSD (Lab ID: 1090006)
 - Calcium
 - Potassium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132229

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: November 01, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20258

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60132229001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1090001)
 - Calcium, Dissolved
- MSD (Lab ID: 1090002)
 - Calcium, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60132229

Method: EPA 200.8
Description: 200.8 MET ICPMS
Client: BP AMEC
Date: November 01, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20261

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60132230002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1090013)
 - Manganese
 - Zinc
- MSD (Lab ID: 1090014)
 - Manganese
 - Zinc

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132229

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 01, 2012

Analyte Comments:

QC Batch: MPRP/20261

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210280600 (Lab ID: 60132229001)
 - Arsenic
 - Selenium
 - Chromium

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132229

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: November 01, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20260

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60132230002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1090009)
 - Manganese, Dissolved
- MSD (Lab ID: 1090010)
 - Manganese, Dissolved

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20260

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210280600 (Lab ID: 60132229001)
 - Arsenic, Dissolved
 - Copper, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132229

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: November 01, 2012

Analyte Comments:

QC Batch: MPRP/20260

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210280600 (Lab ID: 60132229001)

- Lead, Dissolved
- Selenium, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132229

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: November 01, 2012

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132229

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: November 01, 2012

General Information:

1 sample was analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132229

Sample: DR3A1210280600 Lab ID: 60132229001 Collected: 10/28/12 06:00 Received: 10/30/12 10:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	216000	ug/L	100	35.8	1	10/30/12 17:00	10/31/12 12:19	7440-70-2	
Iron	3520	ug/L	50.0	17.2	1	10/30/12 17:00	10/31/12 12:19	7439-89-6	
Magnesium	19200	ug/L	50.0	17.2	1	10/30/12 17:00	10/31/12 12:19	7439-95-4	
Potassium	65400	ug/L	500	64.1	1	10/30/12 17:00	10/31/12 12:19	7440-09-7	
Sodium	11300	ug/L	500	40.1	1	10/30/12 17:00	10/31/12 12:19	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	205000	ug/L	100	35.8	1	10/30/12 17:00	10/31/12 11:39	7440-70-2	M1
Iron, Dissolved	ND	ug/L	50.0	17.2	1	10/30/12 17:00	10/31/12 11:39	7439-89-6	
Lithium, Dissolved	94.0	ug/L	10.0	3.7	1	10/30/12 17:00	11/01/12 10:45	7439-93-2	
Magnesium, Dissolved	18200	ug/L	50.0	17.2	1	10/30/12 17:00	10/31/12 11:39	7439-95-4	
Potassium, Dissolved	62900	ug/L	500	64.1	1	10/30/12 17:00	10/31/12 11:39	7440-09-7	
Sodium, Dissolved	10800	ug/L	500	40.1	1	10/30/12 17:00	10/31/12 11:39	7440-23-5	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	ND	ug/L	5.0	0.70	5	10/30/12 17:00	10/31/12 16:29	7440-38-2	D3
Cadmium	13.3	ug/L	2.5	0.48	5	10/30/12 17:00	10/31/12 16:29	7440-43-9	
Chromium	ND	ug/L	5.0	0.55	5	10/30/12 17:00	10/31/12 16:29	7440-47-3	D3
Cobalt	2.4J	ug/L	5.0	0.24	5	10/30/12 17:00	10/31/12 16:29	7440-48-4	
Copper	32.1	ug/L	5.0	2.2	5	10/30/12 17:00	10/31/12 16:29	7440-50-8	
Lead	1.4J	ug/L	5.0	0.26	5	10/30/12 17:00	10/31/12 16:29	7439-92-1	
Manganese	1640	ug/L	5.0	1.2	5	10/30/12 17:00	10/31/12 16:29	7439-96-5	
Nickel	2.6J	ug/L	5.0	1.8	5	10/30/12 17:00	10/31/12 16:29	7440-02-0	
Selenium	ND	ug/L	5.0	1.8	5	10/30/12 17:00	10/31/12 16:29	7782-49-2	D3
Zinc	2660	ug/L	50.0	8.0	5	10/30/12 17:00	10/31/12 16:29	7440-66-6	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	5.0	0.70	5	10/30/12 17:00	10/31/12 17:11	7440-38-2	D3
Cadmium, Dissolved	12.4	ug/L	2.5	0.48	5	10/30/12 17:00	10/31/12 17:11	7440-43-9	
Chromium, Dissolved	0.64J	ug/L	5.0	0.55	5	10/30/12 17:00	10/31/12 17:11	7440-47-3	
Cobalt, Dissolved	2.5J	ug/L	5.0	0.24	5	10/30/12 17:00	10/31/12 17:11	7440-48-4	
Copper, Dissolved	ND	ug/L	5.0	2.2	5	10/30/12 17:00	10/31/12 17:11	7440-50-8	D3
Lead, Dissolved	ND	ug/L	5.0	0.26	5	10/30/12 17:00	10/31/12 17:11	7439-92-1	D3
Manganese, Dissolved	1620	ug/L	5.0	1.2	5	10/30/12 17:00	10/31/12 17:11	7439-96-5	
Nickel, Dissolved	2.7J	ug/L	5.0	1.8	5	10/30/12 17:00	10/31/12 17:11	7440-02-0	
Selenium, Dissolved	ND	ug/L	5.0	1.8	5	10/30/12 17:00	10/31/12 17:11	7782-49-2	D3
Zinc, Dissolved	2480	ug/L	50.0	8.0	5	10/30/12 17:00	10/31/12 17:11	7440-66-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	112	mg/L	20.0	1.2	1		10/31/12 09:02		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/31/12 09:02		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/31/12 09:02		
Alkalinity, Total as CaCO ₃	112	mg/L	20.0	1.2	1		10/31/12 09:02		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132229

Sample: DR3A1210280600		Lab ID: 60132229001		Collected: 10/28/12 06:00		Received: 10/30/12 10:25		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.29J	mg/L	1.0	0.078	1		10/31/12 01:47	24959-67-9	
Chloride	1.1	mg/L	1.0	0.50	1		10/31/12 01:47	16887-00-6	
Fluoride	2.3	mg/L	0.20	0.011	1		10/31/12 01:47	16984-48-8	
Sulfate	640	mg/L	50.0	6.0	50		10/31/12 02:05	14808-79-8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132229

QC Batch: MPRP/20259

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60132229001

METHOD BLANK: 1090003

Matrix: Water

Associated Lab Samples: 60132229001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	ug/L	ND	100	10/31/12 12:12	
Iron	ug/L	ND	50.0	10/31/12 12:12	
Magnesium	ug/L	ND	50.0	10/31/12 12:12	
Potassium	ug/L	ND	500	10/31/12 12:12	
Sodium	ug/L	ND	500	10/31/12 12:12	

LABORATORY CONTROL SAMPLE: 1090004

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	9810	98	85-115	
Iron	ug/L	10000	9590	96	85-115	
Magnesium	ug/L	10000	9920	99	85-115	
Potassium	ug/L	10000	9490	95	85-115	
Sodium	ug/L	10000	9930	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1090005

1090006

Parameter	Units	60132230002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	221000	10000	10000	211000	217000	-105	-39	70-130	3	9	M1
Iron	ug/L	3490	10000	10000	12400	12400	89	89	70-130	0	10	
Magnesium	ug/L	19300	10000	10000	27500	28200	82	89	70-130	3	9	
Potassium	ug/L	61400	10000	10000	67600	67900	62	66	70-130	1	7	M1
Sodium	ug/L	11100	10000	10000	20400	20500	94	94	70-130	0	8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132229

QC Batch: MPRP/20258

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60132229001

METHOD BLANK: 1089999

Matrix: Water

Associated Lab Samples: 60132229001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	10/31/12 11:32	
Iron, Dissolved	ug/L	ND	50.0	10/31/12 11:32	
Lithium, Dissolved	ug/L	ND	10.0	11/01/12 10:39	
Magnesium, Dissolved	ug/L	ND	50.0	10/31/12 11:32	
Potassium, Dissolved	ug/L	ND	500	10/31/12 11:32	
Sodium, Dissolved	ug/L	ND	500	10/31/12 11:32	

LABORATORY CONTROL SAMPLE: 1090000

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9500	95	85-115	
Iron, Dissolved	ug/L	10000	9510	95	85-115	
Lithium, Dissolved	ug/L	1000	964	96	85-115	
Magnesium, Dissolved	ug/L	10000	9590	96	85-115	
Potassium, Dissolved	ug/L	10000	9420	94	85-115	
Sodium, Dissolved	ug/L	10000	9740	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1090001

1090002

Parameter	Units	60132229001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium, Dissolved	ug/L	205000	10000	10000	218000	219000	131	143	70-130	1	9	M1
Iron, Dissolved	ug/L	ND	10000	10000	9590	9560	96	96	70-130	0	10	
Lithium, Dissolved	ug/L	94.0	1000	1000	1100	1120	101	103	70-130	2	20	
Magnesium, Dissolved	ug/L	18200	10000	10000	28000	28300	98	101	70-130	1	9	
Potassium, Dissolved	ug/L	62900	10000	10000	73300	72400	104	96	70-130	1	7	
Sodium, Dissolved	ug/L	10800	10000	10000	20900	20800	101	100	70-130	0	8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132229

QC Batch:	MPRP/20261	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET
Associated Lab Samples:	60132229001		

METHOD BLANK: 1090011 Matrix: Water

Associated Lab Samples: 60132229001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	10/31/12 16:21	
Cadmium	ug/L	ND	0.50	10/31/12 16:21	
Chromium	ug/L	ND	1.0	10/31/12 16:21	
Cobalt	ug/L	ND	1.0	10/31/12 16:21	
Copper	ug/L	ND	1.0	10/31/12 16:21	
Lead	ug/L	ND	1.0	10/31/12 16:21	
Manganese	ug/L	0.31J	1.0	10/31/12 16:21	
Nickel	ug/L	ND	1.0	10/31/12 16:21	
Selenium	ug/L	ND	1.0	10/31/12 16:21	
Zinc	ug/L	2.2J	10.0	10/31/12 16:21	

LABORATORY CONTROL SAMPLE: 1090012

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	40.2	100	85-115	
Cadmium	ug/L	40	40.3	101	85-115	
Chromium	ug/L	40	39.8	99	85-115	
Cobalt	ug/L	40	38.1	95	85-115	
Copper	ug/L	40	38.7	97	85-115	
Lead	ug/L	40	39.6	99	85-115	
Manganese	ug/L	40	39.9	100	85-115	
Nickel	ug/L	40	38.5	96	85-115	
Selenium	ug/L	40	41.5	104	85-115	
Zinc	ug/L	100	107	107	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1090013 1090014

Parameter	Units	60132230002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	ND	40	40	39.5	40.3	98	100	70-130	2	20	
Cadmium	ug/L	13.6	40	40	53.5	52.5	100	97	70-130	2	20	
Chromium	ug/L	ND	40	40	38.6	39.8	95	98	70-130	3	20	
Cobalt	ug/L	2.4J	40	40	39.4	39.6	92	93	70-130	1	20	
Copper	ug/L	32.2	40	40	69.0	69.2	92	92	70-130	0	20	
Lead	ug/L	1.5J	40	40	40.7	40.7	98	98	70-130	0	20	
Manganese	ug/L	1690	40	40	1700	1700	31	24	70-130	0	20 M1	
Nickel	ug/L	3.2J	40	40	39.2	42.1	90	97	70-130	7	20	
Selenium	ug/L	ND	40	40	39.9	40.3	100	101	70-130	1	20	
Zinc	ug/L	2790	100	100	2790	2820	4	28	70-130	1	20 M1	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132229

QC Batch: MPRP/20260

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60132229001

METHOD BLANK: 1090007

Matrix: Water

Associated Lab Samples: 60132229001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	10/31/12 17:03	
Cadmium, Dissolved	ug/L	ND	0.50	10/31/12 17:03	
Chromium, Dissolved	ug/L	ND	1.0	10/31/12 17:03	
Cobalt, Dissolved	ug/L	ND	1.0	10/31/12 17:03	
Copper, Dissolved	ug/L	ND	1.0	10/31/12 17:03	
Lead, Dissolved	ug/L	ND	1.0	10/31/12 17:03	
Manganese, Dissolved	ug/L	0.38J	1.0	10/31/12 17:03	
Nickel, Dissolved	ug/L	ND	1.0	10/31/12 17:03	
Selenium, Dissolved	ug/L	ND	1.0	10/31/12 17:03	
Zinc, Dissolved	ug/L	2.0J	10.0	10/31/12 17:03	

LABORATORY CONTROL SAMPLE: 1090008

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	36.6	92	85-115	
Cadmium, Dissolved	ug/L	40	38.2	96	85-115	
Chromium, Dissolved	ug/L	40	40.2	101	85-115	
Cobalt, Dissolved	ug/L	40	39.4	98	85-115	
Copper, Dissolved	ug/L	40	39.1	98	85-115	
Lead, Dissolved	ug/L	40	40.3	101	85-115	
Manganese, Dissolved	ug/L	40	40.1	100	85-115	
Nickel, Dissolved	ug/L	40	40.1	100	85-115	
Selenium, Dissolved	ug/L	40	34.1	85	85-115	
Zinc, Dissolved	ug/L	100	93.5	93	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1090009

1090010

Parameter	Units	60132230002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	ND	40	40	38.1	39.7	95	99	70-130	4	20	
Cadmium, Dissolved	ug/L	12.8	40	40	51.6	51.8	97	98	70-130	0	20	
Chromium, Dissolved	ug/L	ND	40	40	39.4	38.6	98	95	70-130	2	20	
Cobalt, Dissolved	ug/L	2.5J	40	40	39.4	39.7	92	93	70-130	1	20	
Copper, Dissolved	ug/L	2.7J	40	40	39.0	39.5	91	92	70-130	1	20	
Lead, Dissolved	ug/L	ND	40	40	38.8	39.4	97	98	70-130	1	20	
Manganese, Dissolved	ug/L	1670	40	40	1670	1680	15	39	70-130	1	20 M1	
Nickel, Dissolved	ug/L	2.5J	40	40	39.2	42.1	92	99	70-130	7	20	
Selenium, Dissolved	ug/L	ND	40	40	38.6	38.5	96	96	70-130	0	20	
Zinc, Dissolved	ug/L	2500	100	100	2570	2580	71	80	70-130	0	20	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132229

QC Batch: WET/37986

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60132229001

METHOD BLANK: 1090182

Matrix: Water

Associated Lab Samples: 60132229001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	10/31/12 08:53	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	10/31/12 08:53	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	10/31/12 08:53	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	10/31/12 08:53	

LABORATORY CONTROL SAMPLE: 1090183

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	511	102	90-110	

SAMPLE DUPLICATE: 1090184

Parameter	Units	60132230002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	111	110	0	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	111	110	0	9	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132229

QC Batch: WETA/22266

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60132229001

METHOD BLANK: 1090169

Matrix: Water

Associated Lab Samples: 60132229001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	10/31/12 01:12	
Chloride	mg/L	ND	1.0	10/31/12 01:12	
Fluoride	mg/L	ND	0.20	10/31/12 01:12	
Sulfate	mg/L	ND	1.0	10/31/12 01:12	

LABORATORY CONTROL SAMPLE: 1090170

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.9	99	90-110	
Chloride	mg/L	5	4.9	99	90-110	
Fluoride	mg/L	2.5	2.5	99	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE SAMPLE: 1090174

Parameter	Units	60132229001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	0.29J	5	5.2	99	75-119	
Chloride	mg/L	1.1	5	5.7	90	64-118	
Fluoride	mg/L	2.3	2.5	4.7	97	75-110	
Sulfate	mg/L	640	250	856	86	61-119	

QUALIFIERS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132229

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132229

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60132229001	DR3A1210280600	EPA 200.7	MPRP/20259	EPA 200.7	ICP/16552
60132229001	DR3A1210280600	EPA 200.7	MPRP/20258	EPA 200.7	ICP/16551
60132229001	DR3A1210280600	EPA 200.8	MPRP/20261	EPA 200.8	ICPM/1790
60132229001	DR3A1210280600	EPA 200.8	MPRP/20260	EPA 200.8	ICPM/1789
60132229001	DR3A1210280600	SM 2320B	WET/37986		
60132229001	DR3A1210280600	EPA 300.0	WETA/22266		

November 01, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60132230

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on October 30, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132230

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132230

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60132230001	DR3A1210270600	Water	10/27/12 06:00	10/30/12 10:25
60132230002	DR3A1210290600	Water	10/29/12 06:00	10/30/12 10:25

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132230

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60132230001	DR3A1210270600	EPA 200.7	SMW	1
		EPA 200.8	JGP	4
		EPA 200.8	JGP	4
		SM 2320B	DJR	4
60132230002	DR3A1210290600	EPA 200.7	SMW	1
		EPA 200.8	JGP	4
		EPA 200.8	JGP	4
		SM 2320B	DJR	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132230

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: November 01, 2012

General Information:

2 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20259

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60132230002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1090005)
 - Potassium
- MSD (Lab ID: 1090006)
 - Potassium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132230

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 01, 2012

General Information:

2 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20261

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60132230002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1090013)
 - Manganese
 - Zinc
- MSD (Lab ID: 1090014)
 - Manganese
 - Zinc

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132230

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: November 01, 2012

General Information:

2 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20260

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60132230002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1090009)
 - Manganese, Dissolved
- MSD (Lab ID: 1090010)
 - Manganese, Dissolved

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20260

- DR3A1210290600 (Lab ID: 60132230002)
 - Cadmium, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132230

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: November 01, 2012

General Information:

2 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132230

Sample: DR3A1210270600		Lab ID: 60132230001		Collected: 10/27/12 06:00		Received: 10/30/12 10:25		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Potassium	64300	ug/L	500	64.1	1	10/30/12 17:00	10/31/12 12:22	7440-09-7	
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Cadmium	14.1	ug/L	2.5	0.48	5	10/30/12 17:00	10/31/12 16:33	7440-43-9	
Iron	3430	ug/L	250	23.0	5	10/30/12 17:00	10/31/12 16:33	7439-89-6	
Manganese	1700	ug/L	5.0	1.2	5	10/30/12 17:00	10/31/12 16:33	7439-96-5	
Zinc	2740	ug/L	50.0	8.0	5	10/30/12 17:00	10/31/12 16:33	7440-66-6	
200.8 MET ICPMS, Dissolved		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Cadmium, Dissolved	13.4	ug/L	2.5	0.48	5	10/30/12 17:00	10/31/12 17:15	7440-43-9	
Iron, Dissolved	98.2J	ug/L	250	23.0	5	10/30/12 17:00	10/31/12 17:15	7439-89-6	
Manganese, Dissolved	1740	ug/L	5.0	1.2	5	10/30/12 17:00	10/31/12 17:15	7439-96-5	D9
Zinc, Dissolved	2660	ug/L	50.0	8.0	5	10/30/12 17:00	10/31/12 17:15	7440-66-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	111	mg/L	20.0	1.2	1		10/31/12 09:06		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/31/12 09:06		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/31/12 09:06		
Alkalinity, Total as CaCO ₃	111	mg/L	20.0	1.2	1		10/31/12 09:06		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132230

Sample: DR3A1210290600 Lab ID: 60132230002 Collected: 10/29/12 06:00 Received: 10/30/12 10:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Potassium	61400	ug/L	500	64.1	1	10/30/12 17:00	10/31/12 12:26	7440-09-7	M1
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Cadmium	13.6	ug/L	2.5	0.48	5	10/30/12 17:00	10/31/12 16:38	7440-43-9	
Iron	3560	ug/L	250	23.0	5	10/30/12 17:00	10/31/12 16:38	7439-89-6	
Manganese	1690	ug/L	5.0	1.2	5	10/30/12 17:00	10/31/12 16:38	7439-96-5	M1
Zinc	2790	ug/L	50.0	8.0	5	10/30/12 17:00	10/31/12 16:38	7440-66-6	M1
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Cadmium, Dissolved	12.8	ug/L	2.5	0.48	5	10/30/12 17:00	10/31/12 17:19	7440-43-9	
Iron, Dissolved	32.2J	ug/L	250	23.0	5	10/30/12 17:00	10/31/12 17:19	7439-89-6	
Manganese, Dissolved	1670	ug/L	5.0	1.2	5	10/30/12 17:00	10/31/12 17:19	7439-96-5	M1
Zinc, Dissolved	2500	ug/L	50.0	8.0	5	10/30/12 17:00	10/31/12 17:19	7440-66-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	111	mg/L	20.0	1.2	1		10/31/12 09:10		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/31/12 09:10		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		10/31/12 09:10		
Alkalinity, Total as CaCO ₃	111	mg/L	20.0	1.2	1		10/31/12 09:10		

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132230

QC Batch: MPRP/20259

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60132230001, 60132230002

METHOD BLANK: 1090003

Matrix: Water

Associated Lab Samples: 60132230001, 60132230002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Potassium	ug/L	ND	500	10/31/12 12:12	

LABORATORY CONTROL SAMPLE: 1090004

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Potassium	ug/L	10000	9490	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1090005 1090006

Parameter	Units	60132230002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Potassium	ug/L	61400	10000	10000	67600	67900	62	66	70-130	1	7	M1

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132230

QC Batch: MPRP/20261 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60132230001, 60132230002

METHOD BLANK: 1090011 Matrix: Water

Associated Lab Samples: 60132230001, 60132230002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium	ug/L	ND	0.50	10/31/12 16:21	
Iron	ug/L	18.3J	50.0	10/31/12 16:21	
Manganese	ug/L	0.31J	1.0	10/31/12 16:21	
Zinc	ug/L	2.2J	10.0	10/31/12 16:21	

LABORATORY CONTROL SAMPLE: 1090012

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	40	40.3	101	85-115	
Iron	ug/L	1000	999	100	85-115	
Manganese	ug/L	40	39.9	100	85-115	
Zinc	ug/L	100	107	107	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1090013 1090014

Parameter	Units	60132230002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium	ug/L	13.6	40	40	53.5	52.5	100	97	70-130	2	20	
Iron	ug/L	3560	1000	1000	4440	4470	88	91	70-130	1	20	
Manganese	ug/L	1690	40	40	1700	1700	31	24	70-130	0	20 M1	
Zinc	ug/L	2790	100	100	2790	2820	4	28	70-130	1	20 M1	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Project No.: 60132230

QC Batch: MPRP/20260

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60132230001, 60132230002

METHOD BLANK: 1090007

Matrix: Water

Associated Lab Samples: 60132230001, 60132230002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium, Dissolved	ug/L	ND	0.50	10/31/12 17:03	
Iron, Dissolved	ug/L	ND	50.0	10/31/12 17:03	
Manganese, Dissolved	ug/L	0.38J	1.0	10/31/12 17:03	
Zinc, Dissolved	ug/L	2.0J	10.0	10/31/12 17:03	

LABORATORY CONTROL SAMPLE: 1090008

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium, Dissolved	ug/L	40	38.2	96	85-115	
Iron, Dissolved	ug/L	1000	1010	101	85-115	
Manganese, Dissolved	ug/L	40	40.1	100	85-115	
Zinc, Dissolved	ug/L	100	93.5	93	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1090009

1090010

Parameter	Units	60132230002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium, Dissolved	ug/L	12.8	40	40	51.6	51.8	97	98	70-130	0	20	
Iron, Dissolved	ug/L	32.2J	1000	1000	1000	1030	97	100	70-130	3	20	
Manganese, Dissolved	ug/L	1670	40	40	1670	1680	15	39	70-130	1	20 M1	
Zinc, Dissolved	ug/L	2500	100	100	2570	2580	71	80	70-130	0	20	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132230

QC Batch: WET/37986

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60132230001, 60132230002

METHOD BLANK: 1090182

Matrix: Water

Associated Lab Samples: 60132230001, 60132230002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	10/31/12 08:53	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	10/31/12 08:53	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	10/31/12 08:53	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	10/31/12 08:53	

LABORATORY CONTROL SAMPLE: 1090183

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	511	102	90-110	

SAMPLE DUPLICATE: 1090184

Parameter	Units	60132230002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	111	110	0	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	111	110	0	9	

QUALIFIERS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132230

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132230

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60132230001	DR3A1210270600	EPA 200.7	MPRP/20259	EPA 200.7	ICP/16552
60132230002	DR3A1210290600	EPA 200.7	MPRP/20259	EPA 200.7	ICP/16552
60132230001	DR3A1210270600	EPA 200.8	MPRP/20261	EPA 200.8	ICPM/1790
60132230002	DR3A1210290600	EPA 200.8	MPRP/20261	EPA 200.8	ICPM/1790
60132230001	DR3A1210270600	EPA 200.8	MPRP/20260	EPA 200.8	ICPM/1789
60132230002	DR3A1210290600	EPA 200.8	MPRP/20260	EPA 200.8	ICPM/1789
60132230001	DR3A1210270600	SM 2320B	WET/37986		
60132230002	DR3A1210290600	SM 2320B	WET/37986		

November 02, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60132294

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on October 31, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132294

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132294

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60132294001	DR3A1210300600	Water	10/30/12 06:00	10/31/12 10:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132294

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60132294001	DR3A1210300600	EPA 200.7	SMW	1
		EPA 200.8	JGP	4
		EPA 200.8	JGP	4
		SM 2320B	DJR	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132294

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: November 02, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132294

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 02, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20284

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60132294001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1090735)
 - Manganese
 - Zinc

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60132294

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: November 02, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20283

B: Analyte was detected in the associated method blank.

- DR3A1210300600 (Lab ID: 60132294001)
- Iron, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132294

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: November 02, 2012

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132294

Sample: DR3A1210300600 Lab ID: 60132294001 Collected: 10/30/12 06:00 Received: 10/31/12 10:00 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Potassium	61700	ug/L	500	64.1	1	10/31/12 16:45	11/01/12 11:43	7440-09-7	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Cadmium	14.4	ug/L	2.5	0.48	5	10/31/12 16:45	11/02/12 11:54	7440-43-9	
Iron	3480	ug/L	250	23.0	5	10/31/12 16:45	11/02/12 11:54	7439-89-6	
Manganese	1700	ug/L	5.0	1.2	5	10/31/12 16:45	11/02/12 11:54	7439-96-5	M1
Zinc	2780	ug/L	50.0	8.0	5	10/31/12 16:45	11/02/12 11:54	7440-66-6	M1
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Cadmium, Dissolved	13.8	ug/L	2.5	0.48	5	10/31/12 16:45	11/02/12 12:27	7440-43-9	
Iron, Dissolved	54.6J	ug/L	250	23.0	5	10/31/12 16:45	11/02/12 12:27	7439-89-6	B
Manganese, Dissolved	1700	ug/L	5.0	1.2	5	10/31/12 16:45	11/02/12 12:27	7439-96-5	D9
Zinc, Dissolved	2660	ug/L	50.0	8.0	5	10/31/12 16:45	11/02/12 12:27	7440-66-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	109	mg/L	20.0	1.2	1		11/01/12 11:49		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		11/01/12 11:49		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		11/01/12 11:49		
Alkalinity, Total as CaCO ₃	109	mg/L	20.0	1.2	1		11/01/12 11:49		

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132294

QC Batch: MPRP/20282

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60132294001

METHOD BLANK: 1090720

Matrix: Water

Associated Lab Samples: 60132294001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Potassium	ug/L	ND	500	11/01/12 11:36	

LABORATORY CONTROL SAMPLE: 1090721

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Potassium	ug/L	10000	9780	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1090722 1090723

Parameter	Units	60132294001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Potassium	ug/L	61700	10000	10000	70500	70800	88	91	70-130	0	7	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132294

QC Batch:	MPRP/20284	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET
Associated Lab Samples:	60132294001		

METHOD BLANK: 1090732 Matrix: Water

Associated Lab Samples: 60132294001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium	ug/L	ND	0.50	11/02/12 11:46	
Iron	ug/L	16.2J	50.0	11/02/12 11:46	
Manganese	ug/L	0.29J	1.0	11/02/12 11:46	
Zinc	ug/L	3.2J	10.0	11/02/12 11:46	

LABORATORY CONTROL SAMPLE: 1090733

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	40	40.2	101	85-115	
Iron	ug/L	1000	1000	100	85-115	
Manganese	ug/L	40	40.1	100	85-115	
Zinc	ug/L	100	110	110	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1090734 1090735

Parameter	Units	60132294001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium	ug/L	14.4	40	40	54.0	53.7	99	98	70-130	1	20	
Iron	ug/L	3480	1000	1000	4540	4390	106	91	70-130	3	20	
Manganese	ug/L	1700	40	40	1730	1650	96	-119	70-130	5	20 M1	
Zinc	ug/L	2780	100	100	2900	2780	118	3	70-130	4	20 M1	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132294

QC Batch: MPRP/20283

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60132294001

METHOD BLANK: 1090724

Matrix: Water

Associated Lab Samples: 60132294001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium, Dissolved	ug/L	ND	0.50	11/02/12 12:19	
Iron, Dissolved	ug/L	5.0J	50.0	11/02/12 12:19	
Manganese, Dissolved	ug/L	0.32J	1.0	11/02/12 12:19	
Zinc, Dissolved	ug/L	4.9J	10.0	11/02/12 12:19	

LABORATORY CONTROL SAMPLE: 1090725

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium, Dissolved	ug/L	40	41.6	104	85-115	
Iron, Dissolved	ug/L	1000	1010	101	85-115	
Manganese, Dissolved	ug/L	40	40.3	101	85-115	
Zinc, Dissolved	ug/L	100	113	113	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1090726

1090727

Parameter	Units	60132294001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium, Dissolved	ug/L	13.8	40	40	53.0	53.6	98	100	70-130	1	20	
Iron, Dissolved	ug/L	54.6J	1000	1000	1040	1060	98	101	70-130	2	20	
Manganese, Dissolved	ug/L	1700	40	40	1740	1740	110	109	70-130	0	20	
Zinc, Dissolved	ug/L	2660	100	100	2780	2790	121	130	70-130	0	20	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132294

QC Batch: WET/38014

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60132294001

METHOD BLANK: 1091221

Matrix: Water

Associated Lab Samples: 60132294001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	11/01/12 11:38	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	11/01/12 11:38	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	11/01/12 11:38	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	11/01/12 11:38	

LABORATORY CONTROL SAMPLE: 1091222

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	510	102	90-110	

SAMPLE DUPLICATE: 1091223

Parameter	Units	60132294001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	109	111	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	109	111	1	9	

SAMPLE DUPLICATE: 1091224

Parameter	Units	60132215003 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	196	197	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	196	197	1	9	

QUALIFIERS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132294

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132294

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60132294001	DR3A1210300600	EPA 200.7	MPRP/20282	EPA 200.7	ICP/16572
60132294001	DR3A1210300600	EPA 200.8	MPRP/20284	EPA 200.8	ICPM/1798
60132294001	DR3A1210300600	EPA 200.8	MPRP/20283	EPA 200.8	ICPM/1797
60132294001	DR3A1210300600	SM 2320B	WET/38014		

November 14, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60132432

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on November 01, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132432

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132432

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60132432001	517INJECT121030	Water	10/30/12 16:55	11/01/12 10:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132432

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60132432001	517INJECT121030	EPA 200.7	JGP	5
		EPA 200.7	JGP	5
		EPA 200.8	SMW	10
		EPA 200.8	SMW	10
		SM 2320B	DJR	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132432

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: November 14, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20303

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60132432001

D6: The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.

- MSD (Lab ID: 1091567)

- Iron

- Magnesium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132432

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: November 14, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20302

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60132432001

D6: The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.

- MSD (Lab ID: 1091563)
 - Calcium, Dissolved
 - Sodium, Dissolved

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20302

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- 517INJECT121030 (Lab ID: 60132432001)
 - Iron, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132432

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 14, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20305

B: Analyte was detected in the associated method blank.

- 517INJECT121030 (Lab ID: 60132432001)
 - Cobalt
 - Lead

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- 517INJECT121030 (Lab ID: 60132432001)
 - Cadmium
 - Chromium
 - Copper
 - Manganese
 - Nickel
 - Zinc

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132432

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 14, 2012

Analyte Comments:

QC Batch: MPRP/20305

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- 517INJECT121030 (Lab ID: 60132432001)
- Arsenic

QC Batch: MPRP/20367

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- 517INJECT121030 (Lab ID: 60132432001)
- Selenium

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60132432

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: November 14, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20304

B: Analyte was detected in the associated method blank.

- 517INJECT121030 (Lab ID: 60132432001)
 - Cobalt, Dissolved
 - Lead, Dissolved

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- 517INJECT121030 (Lab ID: 60132432001)
 - Arsenic, Dissolved
 - Cadmium, Dissolved
 - Chromium, Dissolved
 - Copper, Dissolved
 - Manganese, Dissolved
 - Nickel, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132432

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: November 14, 2012

Analyte Comments:

QC Batch: MPRP/20304

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- 517INJECT121030 (Lab ID: 60132432001)
- Zinc, Dissolved

QC Batch: MPRP/20368

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- 517INJECT121030 (Lab ID: 60132432001)
- Selenium, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132432

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: November 14, 2012

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132432

Sample: 517INJECT121030 Lab ID: 60132432001 Collected: 10/30/12 16:55 Received: 11/01/12 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	24800	ug/L	10000	3580	100	11/02/12 16:00	11/05/12 12:42	7440-70-2	M6
Iron	2460J	ug/L	5000	1720	100	11/02/12 16:00	11/05/12 12:42	7439-89-6	
Magnesium	4040J	ug/L	5000	1720	100	11/02/12 16:00	11/05/12 12:42	7439-95-4	M6
Potassium	190000000	ug/L	5000000	641000	200	11/05/12 16:40	11/06/12 13:48	7440-09-7	
Sodium	636000	ug/L	50000	4010	100	11/02/12 16:00	11/05/12 12:42	7440-23-5	M6
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	8300J	ug/L	10000	3580	100	11/02/12 16:00	11/05/12 13:20	7440-70-2	M6
Iron, Dissolved	ND	ug/L	5000	1720	100	11/02/12 16:00	11/05/12 13:20	7439-89-6	D3
Magnesium, Dissolved	2460J	ug/L	5000	1720	100	11/02/12 16:00	11/05/12 13:20	7439-95-4	
Potassium, Dissolved	190000000	ug/L	5000000	641000	200	11/05/12 04:40	11/06/12 14:06	7440-09-7	M6
Sodium, Dissolved	394000	ug/L	50000	4010	100	11/02/12 16:00	11/05/12 13:20	7440-23-5	M6
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	ND	ug/L	1000	140	1000	11/02/12 16:00	11/06/12 15:28	7440-38-2	D3,M6
Cadmium	ND	ug/L	500	97.0	1000	11/02/12 16:00	11/06/12 15:28	7440-43-9	D3,M6
Chromium	ND	ug/L	1000	110	1000	11/02/12 16:00	11/06/12 15:28	7440-47-3	D3,M6
Cobalt	62.0J	ug/L	1000	48.0	1000	11/02/12 16:00	11/06/12 15:28	7440-48-4	B,M6
Copper	ND	ug/L	1000	450	1000	11/02/12 16:00	11/06/12 15:28	7440-50-8	D3,M6
Lead	364J	ug/L	1000	51.0	1000	11/02/12 16:00	11/06/12 15:28	7439-92-1	B,M6
Manganese	ND	ug/L	1000	230	1000	11/02/12 16:00	11/06/12 15:28	7439-96-5	D3,M6
Nickel	ND	ug/L	1000	350	1000	11/02/12 16:00	11/06/12 15:28	7440-02-0	D3
Selenium	ND	ug/L	1000	350	20	11/07/12 17:30	11/13/12 12:25	7782-49-2	D3
Zinc	ND	ug/L	10000	1600	1000	11/02/12 16:00	11/06/12 15:28	7440-66-6	D3,M6
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	1000	140	1000	11/02/12 16:00	11/06/12 14:01	7440-38-2	D3,M6
Cadmium, Dissolved	ND	ug/L	500	97.0	1000	11/02/12 16:00	11/06/12 14:01	7440-43-9	D3,M6
Chromium, Dissolved	ND	ug/L	1000	110	1000	11/02/12 16:00	11/06/12 14:01	7440-47-3	D3
Cobalt, Dissolved	57.0J	ug/L	1000	48.0	1000	11/02/12 16:00	11/06/12 14:01	7440-48-4	B,M6
Copper, Dissolved	ND	ug/L	1000	450	1000	11/02/12 16:00	11/06/12 14:01	7440-50-8	D3,M6
Lead, Dissolved	346J	ug/L	1000	51.0	1000	11/02/12 16:00	11/06/12 14:01	7439-92-1	B,M6
Manganese, Dissolved	ND	ug/L	1000	230	1000	11/02/12 16:00	11/06/12 14:01	7439-96-5	D3,M6
Nickel, Dissolved	ND	ug/L	1000	350	1000	11/02/12 16:00	11/06/12 14:01	7440-02-0	D3,M6
Selenium, Dissolved	ND	ug/L	1000	350	20	11/07/12 17:30	11/13/12 12:05	7782-49-2	D3
Zinc, Dissolved	ND	ug/L	10000	1600	1000	11/02/12 16:00	11/06/12 14:01	7440-66-6	D3,M6
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	ND	mg/L	6000	360	10		11/05/12 12:32		
Alkalinity, Carbonate (CaCO3)	260000	mg/L	6000	360	10		11/05/12 12:32		
Alkalinity, Hydroxide (CaCO3)	3470J	mg/L	6000	360	10		11/05/12 12:32		
Alkalinity, Total as CaCO3	264000	mg/L	6000	360	10		11/05/12 12:32		

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132432

QC Batch: MPRP/20303

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60132432001

METHOD BLANK: 1091564

Matrix: Water

Associated Lab Samples: 60132432001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	ug/L	ND	100	11/05/12 12:36	
Iron	ug/L	ND	50.0	11/05/12 12:36	
Magnesium	ug/L	ND	50.0	11/05/12 12:36	
Sodium	ug/L	ND	500	11/05/12 12:36	

LABORATORY CONTROL SAMPLE: 1091565

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	9450	94	85-115	
Iron	ug/L	10000	9720	97	85-115	
Magnesium	ug/L	10000	9840	98	85-115	
Sodium	ug/L	10000	10000	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1091566

1091567

Parameter	Units	60132432001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	24800	10000	10000	23000	21300	-18	-35	70-130	8	9	M6
Iron	ug/L	2460J	10000	10000	11600	10200	91	77	70-130	12	10	D6
Magnesium	ug/L	4040J	10000	10000	11800	10200	78	62	70-130	14	9	D6,M6
Sodium	ug/L	636000	10000	10000	620000	595000	-168	-411	70-130	4	8	M6

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132432

QC Batch: MPRP/20326

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60132432001

METHOD BLANK: 1093343

Matrix: Water

Associated Lab Samples: 60132432001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Potassium	ug/L	73.9J	500	11/06/12 13:28	

LABORATORY CONTROL SAMPLE: 1093344

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Potassium	ug/L	10000	9760	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1093345 1093346

Parameter	Units	60132434001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Potassium	ug/L	56300	10000	10000	66700	66600	105	103	70-130	0	7	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132432

QC Batch: MPRP/20302

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60132432001

METHOD BLANK: 1091560

Matrix: Water

Associated Lab Samples: 60132432001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	11/05/12 13:15	
Iron, Dissolved	ug/L	ND	50.0	11/05/12 13:15	
Magnesium, Dissolved	ug/L	ND	50.0	11/05/12 13:15	
Sodium, Dissolved	ug/L	ND	500	11/05/12 13:15	

LABORATORY CONTROL SAMPLE: 1091561

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9350	93	85-115	
Iron, Dissolved	ug/L	10000	9590	96	85-115	
Magnesium, Dissolved	ug/L	10000	9780	98	85-115	
Sodium, Dissolved	ug/L	10000	9980	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1091562 1091563

Parameter	Units	60132432001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium, Dissolved	ug/L	8300J	10000	10000	21100	27700	128	194	70-130	27	9	D6,M6
Iron, Dissolved	ug/L	ND	10000	10000	9240	9620	76	80	70-130	4	10	
Magnesium, Dissolved	ug/L	2460J	10000	10000	10500	10400	81	80	70-130	1	9	
Sodium, Dissolved	ug/L	394000	10000	10000	517000	633000	1233	2391	70-130	20	8	D6,M6

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132432

QC Batch: MPRP/20327

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60132432001

METHOD BLANK: 1093347

Matrix: Water

Associated Lab Samples: 60132432001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Potassium, Dissolved	ug/L	ND	500	11/06/12 13:58	

LABORATORY CONTROL SAMPLE: 1093348

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Potassium, Dissolved	ug/L	10000	9670	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1093349 1093350

Parameter	Units	60132432001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Potassium, Dissolved	ug/L	190000 000	10000	10000	3870000	3600000	-1856260	-1858980	70-130	7	7	M6

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132432

QC Batch:	MPRP/20305	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET
Associated Lab Samples:	60132432001		

METHOD BLANK: 1091572 Matrix: Water

Associated Lab Samples: 60132432001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	11/06/12 15:12	
Cadmium	ug/L	0.29J	0.50	11/06/12 15:12	
Chromium	ug/L	0.49J	1.0	11/06/12 15:12	
Cobalt	ug/L	0.44J	1.0	11/06/12 15:12	
Copper	ug/L	0.46J	1.0	11/06/12 15:12	
Lead	ug/L	0.69J	1.0	11/06/12 15:12	
Manganese	ug/L	0.77J	1.0	11/06/12 15:12	
Nickel	ug/L	0.51J	1.0	11/06/12 15:12	
Zinc	ug/L	1.7J	10.0	11/06/12 15:12	

LABORATORY CONTROL SAMPLE: 1091573

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	37.3	93	85-115	
Cadmium	ug/L	40	38.3	96	85-115	
Chromium	ug/L	40	42.8	107	85-115	
Cobalt	ug/L	40	40.9	102	85-115	
Copper	ug/L	40	40.0	100	85-115	
Lead	ug/L	40	41.7	104	85-115	
Manganese	ug/L	40	42.9	107	85-115	
Nickel	ug/L	40	40.6	101	85-115	
Zinc	ug/L	100	93.7	94	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1091574 1091575

Parameter	Units	60132432001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	ND	40	40	ND	ND	0	0	70-130		20 M6	
Cadmium	ug/L	ND	40	40	ND	ND	0	0	70-130		20 M6	
Chromium	ug/L	ND	40	40	ND	ND	62	102	70-130		20 M6	
Cobalt	ug/L	62.0J	40	40	295J	132J	582	175	70-130		20 M6	
Copper	ug/L	ND	40	40	ND	ND	0	0	70-130		20 M6	
Lead	ug/L	364J	40	40	398J	390J	85	65	70-130		20 M6	
Manganese	ug/L	ND	40	40	ND	ND	-262	-138	70-130		20 M6	
Nickel	ug/L	ND	40	40	ND	ND	95	70	70-130		20	
Zinc	ug/L	ND	100	100	ND	ND	-187	-187	70-130		20 M6	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132432

QC Batch:	MPRP/20367	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET
Associated Lab Samples:	60132432001		

METHOD BLANK: 1094495 Matrix: Water

Associated Lab Samples: 60132432001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Selenium	ug/L	ND	1.0	11/13/12 12:46	

LABORATORY CONTROL SAMPLE: 1094496

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Selenium	ug/L	40	40.5	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1094497 1094498

Parameter	Units	60132432001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Selenium	ug/L	ND	2000	2000	1800	1860	90	93	70-130	3	20	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132432

QC Batch: MPRP/20304

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60132432001

METHOD BLANK: 1091568

Matrix: Water

Associated Lab Samples: 60132432001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	11/06/12 13:45	
Cadmium, Dissolved	ug/L	ND	0.50	11/06/12 13:45	
Chromium, Dissolved	ug/L	0.16J	1.0	11/06/12 13:45	
Cobalt, Dissolved	ug/L	0.058J	1.0	11/06/12 13:45	
Copper, Dissolved	ug/L	ND	1.0	11/06/12 13:45	
Lead, Dissolved	ug/L	0.26J	1.0	11/06/12 13:45	
Manganese, Dissolved	ug/L	0.40J	1.0	11/06/12 13:45	
Nickel, Dissolved	ug/L	ND	1.0	11/06/12 13:45	
Zinc, Dissolved	ug/L	1.7J	10.0	11/06/12 13:45	

LABORATORY CONTROL SAMPLE: 1091569

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	36.1	90	85-115	
Cadmium, Dissolved	ug/L	40	38.1	95	85-115	
Chromium, Dissolved	ug/L	40	43.4	108	85-115	
Cobalt, Dissolved	ug/L	40	41.7	104	85-115	
Copper, Dissolved	ug/L	40	41.0	102	85-115	
Lead, Dissolved	ug/L	40	41.8	105	85-115	
Manganese, Dissolved	ug/L	40	43.0	107	85-115	
Nickel, Dissolved	ug/L	40	41.0	103	85-115	
Zinc, Dissolved	ug/L	100	94.9	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1091570

1091571

Parameter	Units	60132432001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	ND	40	40	ND	ND	0	0	70-130		20 M6	
Cadmium, Dissolved	ug/L	ND	40	40	ND	ND	0	0	70-130		20 M6	
Chromium, Dissolved	ug/L	ND	40	40	ND	ND	118	115	70-130		20	
Cobalt, Dissolved	ug/L	57.0J	40	40	103J	136J	115	198	70-130		20 M6	
Copper, Dissolved	ug/L	ND	40	40	ND	ND	0	0	70-130		20 M6	
Lead, Dissolved	ug/L	346J	40	40	400J	373J	135	68	70-130		20 M6	
Manganese, Dissolved	ug/L	ND	40	40	ND	ND	35	-38	70-130		20 M6	
Nickel, Dissolved	ug/L	ND	40	40	ND	ND	155	90	70-130		20 M6	
Zinc, Dissolved	ug/L	ND	100	100	ND	ND	0	0	70-130		20 M6	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132432

QC Batch: MPRP/20368

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60132432001

METHOD BLANK: 1094508

Matrix: Water

Associated Lab Samples: 60132432001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Selenium, Dissolved	ug/L	ND	1.0	11/13/12 11:57	

LABORATORY CONTROL SAMPLE: 1094509

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Selenium, Dissolved	ug/L	40	40.9	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1094510

1094511

Parameter	Units	60132432001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Selenium, Dissolved	ug/L	ND	2000	2000	1600	1890	80	94	70-130	17	20	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132432

QC Batch: WET/38052

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60132432001

METHOD BLANK: 1093091

Matrix: Water

Associated Lab Samples: 60132432001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	11/05/12 09:32	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	11/05/12 09:32	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	11/05/12 09:32	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	11/05/12 09:32	

LABORATORY CONTROL SAMPLE: 1093092

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	506	101	90-110	

SAMPLE DUPLICATE: 1093093

Parameter	Units	60132434001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	115	108	6	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	115	108	6	9	

SAMPLE DUPLICATE: 1093094

Parameter	Units	60132263027 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	182	184	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	182	184	1	9	

QUALIFIERS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132432

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

D6 The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132432

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60132432001	517INJECT121030	EPA 200.7	MPRP/20303	EPA 200.7	ICP/16594
60132432001	517INJECT121030	EPA 200.7	MPRP/20326	EPA 200.7	ICP/16599
60132432001	517INJECT121030	EPA 200.7	MPRP/20302	EPA 200.7	ICP/16593
60132432001	517INJECT121030	EPA 200.7	MPRP/20327	EPA 200.7	ICP/16597
60132432001	517INJECT121030	EPA 200.8	MPRP/20305	EPA 200.8	ICPM/1803
60132432001	517INJECT121030	EPA 200.8	MPRP/20367	EPA 200.8	ICPM/1819
60132432001	517INJECT121030	EPA 200.8	MPRP/20304	EPA 200.8	ICPM/1802
60132432001	517INJECT121030	EPA 200.8	MPRP/20368	EPA 200.8	ICPM/1818
60132432001	517INJECT121030	SM 2320B	WET/38052		

November 08, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60132434

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on November 01, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

This report revision is being issued to correct an error in the listing of certification numbers. There are no changes to any reported result.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132434

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132434

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60132434001	DR3A1210310600	Water	10/31/12 06:00	11/01/12 10:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132434

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60132434001	DR3A1210310600	EPA 200.7	JGP	1
		EPA 200.8	SMW	4
		EPA 200.8	SMW	4
		SM 2320B	DJR	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132434

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: November 08, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132434

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 08, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60132434

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: November 08, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20304

B: Analyte was detected in the associated method blank.

- DR3A1210310600 (Lab ID: 60132434001)
- Iron, Dissolved

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1210310600 (Lab ID: 60132434001)
- Iron, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132434

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: November 08, 2012

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132434

Sample: DR3A1210310600 Lab ID: 60132434001 Collected: 10/31/12 06:00 Received: 11/01/12 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Potassium	56300	ug/L	1000	128	2	11/05/12 16:40	11/06/12 13:34	7440-09-7	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Cadmium	14.8	ug/L	2.5	0.48	5	11/02/12 16:00	11/06/12 15:20	7440-43-9	
Iron	3700	ug/L	250	23.0	5	11/02/12 16:00	11/06/12 15:20	7439-89-6	
Manganese	1690	ug/L	5.0	1.2	5	11/02/12 16:00	11/06/12 15:20	7439-96-5	
Zinc	2660	ug/L	50.0	8.0	5	11/02/12 16:00	11/06/12 15:20	7440-66-6	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Cadmium, Dissolved	13.3	ug/L	2.5	0.48	5	11/02/12 16:00	11/06/12 13:53	7440-43-9	
Iron, Dissolved	60.3J	ug/L	250	23.0	5	11/02/12 16:00	11/06/12 13:53	7439-89-6	B,D3
Manganese, Dissolved	1680	ug/L	5.0	1.2	5	11/02/12 16:00	11/06/12 13:53	7439-96-5	
Zinc, Dissolved	2550	ug/L	50.0	8.0	5	11/02/12 16:00	11/06/12 13:53	7440-66-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	115	mg/L	20.0	1.2	1		11/05/12 09:42		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		11/05/12 09:42		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		11/05/12 09:42		
Alkalinity, Total as CaCO3	115	mg/L	20.0	1.2	1		11/05/12 09:42		

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132434

QC Batch: MPRP/20326

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60132434001

METHOD BLANK: 1093343

Matrix: Water

Associated Lab Samples: 60132434001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Potassium	ug/L	73.9J	500	11/06/12 13:28	

LABORATORY CONTROL SAMPLE: 1093344

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Potassium	ug/L	10000	9760	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1093345 1093346

Parameter	Units	60132434001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Potassium	ug/L	56300	10000	10000	66700	66600	105	103	70-130	0	7	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Project No.: 60132434

QC Batch:	MPRP/20305	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET
Associated Lab Samples:	60132434001		

METHOD BLANK: 1091572 Matrix: Water

Associated Lab Samples: 60132434001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium	ug/L	0.29J	0.50	11/06/12 15:12	
Iron	ug/L	9.7J	50.0	11/06/12 15:12	
Manganese	ug/L	0.77J	1.0	11/06/12 15:12	
Zinc	ug/L	1.7J	10.0	11/06/12 15:12	

LABORATORY CONTROL SAMPLE: 1091573

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	40	38.3	96	85-115	
Iron	ug/L	1000	1070	107	85-115	
Manganese	ug/L	40	42.9	107	85-115	
Zinc	ug/L	100	93.7	94	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1091574 1091575

Parameter	Units	60132432001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium	ug/L	ND	40	40	ND	ND	0	0	70-130		20 M6	
Iron	ug/L	6760J	1000	1000	ND	ND	-330	-338	70-130		20 M6	
Manganese	ug/L	ND	40	40	ND	ND	-262	-138	70-130		20 M6	
Zinc	ug/L	ND	100	100	ND	ND	-187	-187	70-130		20 M6	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132434

QC Batch: MPRP/20304

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60132434001

METHOD BLANK: 1091568

Matrix: Water

Associated Lab Samples: 60132434001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium, Dissolved	ug/L	ND	0.50	11/06/12 13:45	
Iron, Dissolved	ug/L	5.2J	50.0	11/06/12 13:45	
Manganese, Dissolved	ug/L	0.40J	1.0	11/06/12 13:45	
Zinc, Dissolved	ug/L	1.7J	10.0	11/06/12 13:45	

LABORATORY CONTROL SAMPLE: 1091569

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium, Dissolved	ug/L	40	38.1	95	85-115	
Iron, Dissolved	ug/L	1000	1070	107	85-115	
Manganese, Dissolved	ug/L	40	43.0	107	85-115	
Zinc, Dissolved	ug/L	100	94.9	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1091570

1091571

Parameter	Units	60132432001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium, Dissolved	ug/L	ND	40	40	ND	ND	0	0	70-130		20 M6	
Iron, Dissolved	ug/L	ND	1000	1000	5000J	ND	277	42	70-130		20 M6	
Manganese, Dissolved	ug/L	ND	40	40	ND	ND	35	-38	70-130		20 M6	
Zinc, Dissolved	ug/L	ND	100	100	ND	ND	0	0	70-130		20 M6	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132434

QC Batch: WET/38052

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60132434001

METHOD BLANK: 1093091

Matrix: Water

Associated Lab Samples: 60132434001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	11/05/12 09:32	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	11/05/12 09:32	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	11/05/12 09:32	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	11/05/12 09:32	

LABORATORY CONTROL SAMPLE: 1093092

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	506	101	90-110	

SAMPLE DUPLICATE: 1093093

Parameter	Units	60132434001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	115	108	6	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	115	108	6	9	

SAMPLE DUPLICATE: 1093094

Parameter	Units	60132263027 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	182	184	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	182	184	1	9	

QUALIFIERS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132434

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132434

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60132434001	DR3A1210310600	EPA 200.7	MPRP/20303	EPA 200.7	ICP/16594
60132434001	DR3A1210310600	EPA 200.7	MPRP/20326	EPA 200.7	ICP/16599
60132434001	DR3A1210310600	EPA 200.8	MPRP/20305	EPA 200.8	ICPM/1803
60132434001	DR3A1210310600	EPA 200.8	MPRP/20304	EPA 200.8	ICPM/1802
60132434001	DR3A1210310600	SM 2320B	WET/38052		

November 08, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60132530

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on November 02, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132530

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132530

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60132530001	DR3A1211010600	Water	11/01/12 06:00	11/02/12 10:20

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132530

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60132530001	DR3A1211010600	EPA 200.7	JGP	1
		EPA 200.8	SMW	4
		EPA 200.8	SMW	4
		SM 2320B	DJR	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132530

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: November 08, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132530

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 08, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132530

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: November 08, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20330

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60132530001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1093384)
 - Manganese, Dissolved
 - Zinc, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132530

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: November 08, 2012

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132530

Sample: DR3A1211010600		Lab ID: 60132530001		Collected: 11/01/12 06:00		Received: 11/02/12 10:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Potassium	60800	ug/L	500	64.1	1	11/05/12 16:40	11/07/12 12:25	7440-09-7	
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Cadmium	14.6	ug/L	2.5	0.48	5	11/06/12 16:40	11/07/12 16:07	7440-43-9	
Iron	3720	ug/L	250	23.0	5	11/06/12 16:40	11/07/12 16:07	7439-89-6	
Manganese	1690	ug/L	5.0	1.2	5	11/06/12 16:40	11/07/12 16:07	7439-96-5	
Zinc	2710	ug/L	50.0	8.0	5	11/06/12 16:40	11/07/12 16:07	7440-66-6	
200.8 MET ICPMS, Dissolved		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Cadmium, Dissolved	13.2	ug/L	2.5	0.48	5	11/06/12 16:40	11/07/12 14:44	7440-43-9	
Iron, Dissolved	80.3J	ug/L	250	23.0	5	11/06/12 16:40	11/07/12 14:44	7439-89-6	
Manganese, Dissolved	1690	ug/L	5.0	1.2	5	11/06/12 16:40	11/07/12 14:44	7439-96-5	M1
Zinc, Dissolved	2600	ug/L	50.0	8.0	5	11/06/12 16:40	11/07/12 14:44	7440-66-6	M1
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	106	mg/L	20.0	1.2	1		11/05/12 09:50		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		11/05/12 09:50		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		11/05/12 09:50		
Alkalinity, Total as CaCO ₃	106	mg/L	20.0	1.2	1		11/05/12 09:50		

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132530

QC Batch: MPRP/20329

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60132530001

METHOD BLANK: 1093378

Matrix: Water

Associated Lab Samples: 60132530001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Potassium	ug/L	ND	500	11/07/12 12:21	

LABORATORY CONTROL SAMPLE: 1093379

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Potassium	ug/L	10000	9930	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1093380 1093381

Parameter	Units	60132530001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Potassium	ug/L	60800	10000	10000	70700	72500	98	116	70-130	3	7	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Project No.: 60132530

QC Batch:	MPRP/20331	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET
Associated Lab Samples:	60132530001		

METHOD BLANK: 1093386 Matrix: Water

Associated Lab Samples: 60132530001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium	ug/L	ND	0.50	11/07/12 15:59	
Iron	ug/L	ND	50.0	11/07/12 15:59	
Manganese	ug/L	ND	1.0	11/07/12 15:59	
Zinc	ug/L	ND	10.0	11/07/12 15:59	

LABORATORY CONTROL SAMPLE: 1093387

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	40	41.1	103	85-115	
Iron	ug/L	1000	1040	104	85-115	
Manganese	ug/L	40	40.7	102	85-115	
Zinc	ug/L	100	104	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1093388 1093389

Parameter	Units	60132532002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium	ug/L	1500	40	40	1590	1560	235	150	70-130	2	20	M6
Iron	ug/L	1800000	1000	1000	1800000	1790000	0	-800	70-130	0	20	M6
Manganese	ug/L	112000	40	40	113000	112000	1250	-2000	70-130	1	20	M6
Zinc	ug/L	222000	100	100	218000	220000	-3600	-2500	70-130	1	20	M6

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132530

QC Batch: MPRP/20330

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60132530001

METHOD BLANK: 1093382

Matrix: Water

Associated Lab Samples: 60132530001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium, Dissolved	ug/L	ND	0.50	11/07/12 14:36	
Iron, Dissolved	ug/L	ND	50.0	11/07/12 14:36	
Manganese, Dissolved	ug/L	ND	1.0	11/07/12 14:36	
Zinc, Dissolved	ug/L	ND	10.0	11/07/12 14:36	

LABORATORY CONTROL SAMPLE: 1093383

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium, Dissolved	ug/L	40	41.0	102	85-115	
Iron, Dissolved	ug/L	1000	1040	104	85-115	
Manganese, Dissolved	ug/L	40	40.4	101	85-115	
Zinc, Dissolved	ug/L	100	103	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1093384

1093385

Parameter	Units	60132530001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium, Dissolved	ug/L	13.2	40	40	55.0	54.0	104	102	70-130	2	20	
Iron, Dissolved	ug/L	80.3J	1000	1000	1110	1120	103	104	70-130	1	20	
Manganese, Dissolved	ug/L	1690	40	40	1750	1730	169	101	70-130	2	20 M1	
Zinc, Dissolved	ug/L	2600	100	100	2730	2690	133	90	70-130	2	20 M1	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132530

QC Batch: WET/38052

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60132530001

METHOD BLANK: 1093091

Matrix: Water

Associated Lab Samples: 60132530001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	11/05/12 09:32	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	11/05/12 09:32	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	11/05/12 09:32	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	11/05/12 09:32	

LABORATORY CONTROL SAMPLE: 1093092

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	506	101	90-110	

SAMPLE DUPLICATE: 1093093

Parameter	Units	60132434001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	115	108	6	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	115	108	6	9	

SAMPLE DUPLICATE: 1093094

Parameter	Units	60132263027 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	182	184	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	182	184	1	9	

QUALIFIERS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132530

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132530

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60132530001	DR3A1211010600	EPA 200.7	MPRP/20329	EPA 200.7	ICP/16603
60132530001	DR3A1211010600	EPA 200.8	MPRP/20331	EPA 200.8	ICPM/1809
60132530001	DR3A1211010600	EPA 200.8	MPRP/20330	EPA 200.8	ICPM/1808
60132530001	DR3A1211010600	SM 2320B	WET/38052		

November 13, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60132532

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on November 02, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132532

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132532

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60132532001	BLAINEOBF121031	Water	10/31/12 12:55	11/02/12 10:20
60132532002	BLAINEIBF121031	Water	10/31/12 13:00	11/02/12 10:20
60132532003	517SHAFT465121031	Water	10/31/12 15:45	11/02/12 10:20

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132532

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60132532001	BLAINEOBF121031	EPA 200.7	JGP	5
		EPA 200.7	JGP	6
		EPA 200.8	SMW	10
		EPA 200.8	SMW	10
		SM 2320B	DJR	4
		EPA 300.0	AJM	4
60132532002	BLAINEIBF121031	EPA 200.7	JGP	5
		EPA 200.7	JGP	6
		EPA 200.8	SMW	10
		EPA 200.8	SMW	10
		SM 2320B	DJR	4
		EPA 300.0	AJM	4
60132532003	517SHAFT465121031	EPA 200.7	JGP	5
		EPA 200.7	JGP	6
		EPA 200.8	SMW	10
		EPA 200.8	SMW	10
		SM 2320B	DJR	4
		EPA 300.0	AJM	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132532

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: November 13, 2012

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20329

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60132530001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1093380)
- Calcium

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20329

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- BLAINEOBF121031 (Lab ID: 60132532001)
- Potassium

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132532

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: November 13, 2012

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20319

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- BLAINEOBF121031 (Lab ID: 60132532001)
 - Potassium, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132532

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 13, 2012

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20331

B: Analyte was detected in the associated method blank.

- BLAINEIBF121031 (Lab ID: 60132532002)

- Lead

- BLAINEOBF121031 (Lab ID: 60132532001)

- Lead

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- 517SHAFT465121031 (Lab ID: 60132532003)

- Selenium

- BLAINEIBF121031 (Lab ID: 60132532002)

- Arsenic

- Selenium

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132532

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 13, 2012

Analyte Comments:

QC Batch: MPRP/20331

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- BLAINEOBF121031 (Lab ID: 60132532001)
 - Selenium

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132532

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: November 13, 2012

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20330

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60132530001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1093384)
 - Manganese, Dissolved
 - Zinc, Dissolved

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20330

B: Analyte was detected in the associated method blank.

- BLAINEIBF121031 (Lab ID: 60132532002)
 - Lead, Dissolved
- BLAINEOBF121031 (Lab ID: 60132532001)
 - Lead, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132532

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: November 13, 2012

Analyte Comments:

QC Batch: MPRP/20330

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- 517SHAFT465121031 (Lab ID: 60132532003)
 - Selenium, Dissolved
- BLAINEIBF121031 (Lab ID: 60132532002)
 - Arsenic, Dissolved
 - Selenium, Dissolved
- BLAINEOBF121031 (Lab ID: 60132532001)
 - Selenium, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60132532

Method: SM 2320B
Description: 2320B Alkalinity
Client: BP AMEC
Date: November 13, 2012

General Information:

3 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132532

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: November 13, 2012

General Information:

3 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132532

Sample: BLAINEOBF121031 Lab ID: 60132532001 Collected: 10/31/12 12:55 Received: 11/02/12 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	458000	ug/L	1000	358	10	11/05/12 16:40	11/07/12 12:40	7440-70-2	
Iron	4280000	ug/L	500	172	10	11/05/12 16:40	11/07/12 12:40	7439-89-6	
Magnesium	287000	ug/L	500	172	10	11/05/12 16:40	11/07/12 12:40	7439-95-4	
Potassium	ND	ug/L	2500	320	5	11/05/12 16:40	11/13/12 10:59	7440-09-7	D3
Sodium	26300	ug/L	5000	401	10	11/05/12 16:40	11/07/12 12:40	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	439000	ug/L	1000	358	10	11/05/12 11:00	11/06/12 15:31	7440-70-2	
Iron, Dissolved	4040000	ug/L	500	172	10	11/05/12 11:00	11/06/12 15:31	7439-89-6	
Lithium, Dissolved	480	ug/L	100	36.6	10	11/05/12 11:00	11/06/12 15:31	7439-93-2	
Magnesium, Dissolved	284000	ug/L	500	172	10	11/05/12 11:00	11/06/12 15:31	7439-95-4	
Potassium, Dissolved	ND	ug/L	2500	320	5	11/05/12 11:00	11/13/12 11:02	7440-09-7	D3
Sodium, Dissolved	25900	ug/L	5000	401	10	11/05/12 11:00	11/06/12 15:31	7440-23-5	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	4890	ug/L	1000	140	1000	11/06/12 16:40	11/07/12 16:15	7440-38-2	
Cadmium	4480	ug/L	500	97.0	1000	11/06/12 16:40	11/07/12 16:15	7440-43-9	
Chromium	220J	ug/L	1000	110	1000	11/06/12 16:40	11/07/12 16:15	7440-47-3	
Cobalt	580J	ug/L	1000	48.0	1000	11/06/12 16:40	11/07/12 16:15	7440-48-4	
Copper	42700	ug/L	1000	450	1000	11/06/12 16:40	11/07/12 16:15	7440-50-8	
Lead	1080	ug/L	1000	51.0	1000	11/06/12 16:40	11/07/12 16:15	7439-92-1	B
Manganese	216000	ug/L	1000	230	1000	11/06/12 16:40	11/07/12 16:15	7439-96-5	
Nickel	644J	ug/L	1000	350	1000	11/06/12 16:40	11/07/12 16:15	7440-02-0	
Selenium	ND	ug/L	1000	350	1000	11/06/12 16:40	11/07/12 16:15	7782-49-2	D3
Zinc	623000	ug/L	10000	1600	1000	11/06/12 16:40	11/07/12 16:15	7440-66-6	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	4940	ug/L	1000	140	1000	11/06/12 16:40	11/07/12 15:01	7440-38-2	D9
Cadmium, Dissolved	4530	ug/L	500	97.0	1000	11/06/12 16:40	11/07/12 15:01	7440-43-9	D9
Chromium, Dissolved	272J	ug/L	1000	110	1000	11/06/12 16:40	11/07/12 15:01	7440-47-3	
Cobalt, Dissolved	576J	ug/L	1000	48.0	1000	11/06/12 16:40	11/07/12 15:01	7440-48-4	
Copper, Dissolved	43900	ug/L	1000	450	1000	11/06/12 16:40	11/07/12 15:01	7440-50-8	D9
Lead, Dissolved	1110	ug/L	1000	51.0	1000	11/06/12 16:40	11/07/12 15:01	7439-92-1	B,D9
Manganese, Dissolved	222000	ug/L	1000	230	1000	11/06/12 16:40	11/07/12 15:01	7439-96-5	D9
Nickel, Dissolved	659J	ug/L	1000	350	1000	11/06/12 16:40	11/07/12 15:01	7440-02-0	
Selenium, Dissolved	ND	ug/L	1000	350	1000	11/06/12 16:40	11/07/12 15:01	7782-49-2	D3
Zinc, Dissolved	637000	ug/L	10000	1600	1000	11/06/12 16:40	11/07/12 15:01	7440-66-6	D9
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	ND	mg/L	20.0	1.2	1		11/05/12 09:52		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		11/05/12 09:52		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		11/05/12 09:52		
Alkalinity, Total as CaCO3	ND	mg/L	20.0	1.2	1		11/05/12 09:52		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132532

Sample: BLAINEOBF121031		Lab ID: 60132532001		Collected: 10/31/12 12:55		Received: 11/02/12 10:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.078	1		11/03/12 14:11	24959-67-9	
Chloride	9.7	mg/L	1.0	0.50	1		11/03/12 14:11	16887-00-6	
Fluoride	46.3	mg/L	2.0	0.11	10		11/03/12 14:29	16984-48-8	
Sulfate	40400	mg/L	5000	600	5000		11/05/12 21:09	14808-79-8	

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132532

Sample: BLAINEIBF121031 Lab ID: 60132532002 Collected: 10/31/12 13:00 Received: 11/02/12 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	389000	ug/L	1000	358	10	11/05/12 16:40	11/07/12 12:46	7440-70-2	
Iron	1690000	ug/L	500	172	10	11/05/12 16:40	11/07/12 12:46	7439-89-6	
Magnesium	222000	ug/L	500	172	10	11/05/12 16:40	11/07/12 12:46	7439-95-4	
Potassium	7180	ug/L	5000	641	10	11/05/12 16:40	11/07/12 12:46	7440-09-7	
Sodium	5300	ug/L	5000	401	10	11/05/12 16:40	11/07/12 12:46	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	380000	ug/L	1000	358	10	11/05/12 11:00	11/06/12 15:33	7440-70-2	
Iron, Dissolved	1630000	ug/L	500	172	10	11/05/12 11:00	11/06/12 15:33	7439-89-6	M6
Lithium, Dissolved	285	ug/L	100	36.6	10	11/05/12 11:00	11/06/12 15:33	7439-93-2	
Magnesium, Dissolved	227000	ug/L	500	172	10	11/05/12 11:00	11/06/12 15:33	7439-95-4	D9,M6
Potassium, Dissolved	7980	ug/L	5000	641	10	11/05/12 11:00	11/06/12 15:33	7440-09-7	D9
Sodium, Dissolved	5960	ug/L	5000	401	10	11/05/12 11:00	11/06/12 15:33	7440-23-5	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	ND	ug/L	1000	140	1000	11/06/12 16:40	11/07/12 16:27	7440-38-2	D3,M6
Cadmium	1500	ug/L	500	97.0	1000	11/06/12 16:40	11/07/12 16:27	7440-43-9	M6
Chromium	212J	ug/L	1000	110	1000	11/06/12 16:40	11/07/12 16:27	7440-47-3	M6
Cobalt	235J	ug/L	1000	48.0	1000	11/06/12 16:40	11/07/12 16:27	7440-48-4	M6
Copper	27200	ug/L	1000	450	1000	11/06/12 16:40	11/07/12 16:27	7440-50-8	M6
Lead	388J	ug/L	1000	51.0	1000	11/06/12 16:40	11/07/12 16:27	7439-92-1	B
Manganese	112000	ug/L	1000	230	1000	11/06/12 16:40	11/07/12 16:27	7439-96-5	M6
Nickel	513J	ug/L	1000	350	1000	11/06/12 16:40	11/07/12 16:27	7440-02-0	M6
Selenium	ND	ug/L	1000	350	1000	11/06/12 16:40	11/07/12 16:27	7782-49-2	D3,M6
Zinc	222000	ug/L	10000	1600	1000	11/06/12 16:40	11/07/12 16:27	7440-66-6	M6
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	1000	140	1000	11/06/12 16:40	11/07/12 15:05	7440-38-2	D3
Cadmium, Dissolved	1520	ug/L	500	97.0	1000	11/06/12 16:40	11/07/12 15:05	7440-43-9	D9
Chromium, Dissolved	186J	ug/L	1000	110	1000	11/06/12 16:40	11/07/12 15:05	7440-47-3	
Cobalt, Dissolved	219J	ug/L	1000	48.0	1000	11/06/12 16:40	11/07/12 15:05	7440-48-4	
Copper, Dissolved	26600	ug/L	1000	450	1000	11/06/12 16:40	11/07/12 15:05	7440-50-8	
Lead, Dissolved	389J	ug/L	1000	51.0	1000	11/06/12 16:40	11/07/12 15:05	7439-92-1	B
Manganese, Dissolved	112000	ug/L	1000	230	1000	11/06/12 16:40	11/07/12 15:05	7439-96-5	
Nickel, Dissolved	397J	ug/L	1000	350	1000	11/06/12 16:40	11/07/12 15:05	7440-02-0	
Selenium, Dissolved	ND	ug/L	1000	350	1000	11/06/12 16:40	11/07/12 15:05	7782-49-2	D3
Zinc, Dissolved	220000	ug/L	10000	1600	1000	11/06/12 16:40	11/07/12 15:05	7440-66-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	ND	mg/L	20.0	1.2	1		11/05/12 09:54		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		11/05/12 09:54		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		11/05/12 09:54		
Alkalinity, Total as CaCO3	ND	mg/L	20.0	1.2	1		11/05/12 09:54		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132532

Sample: BLAINEIBF121031		Lab ID: 60132532002		Collected: 10/31/12 13:00		Received: 11/02/12 10:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.078	1		11/03/12 15:57	24959-67-9	
Chloride	2.2	mg/L	1.0	0.50	1		11/03/12 15:57	16887-00-6	
Fluoride	53.3	mg/L	2.0	0.11	10		11/03/12 16:15	16984-48-8	
Sulfate	34400	mg/L	2000	240	2000		11/03/12 15:04	14808-79-8	

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132532

Sample: 517SHAFT465121031 Lab ID: 60132532003 Collected: 10/31/12 15:45 Received: 11/02/12 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	31100	ug/L	100	35.8	1	11/05/12 16:40	11/07/12 12:36	7440-70-2	
Iron	1170	ug/L	50.0	17.2	1	11/05/12 16:40	11/07/12 12:36	7439-89-6	
Magnesium	12700	ug/L	50.0	17.2	1	11/05/12 16:40	11/07/12 12:36	7439-95-4	
Potassium	2400000	ug/L	50000	6410	100	11/05/12 16:40	11/07/12 12:38	7440-09-7	
Sodium	13600	ug/L	500	40.1	1	11/05/12 16:40	11/07/12 12:36	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	7640	ug/L	100	35.8	1	11/05/12 11:00	11/06/12 15:28	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	17.2	1	11/05/12 11:00	11/06/12 15:28	7439-89-6	
Lithium, Dissolved	834	ug/L	10.0	3.7	1	11/05/12 11:00	11/06/12 15:28	7439-93-2	
Magnesium, Dissolved	12500	ug/L	50.0	17.2	1	11/05/12 11:00	11/06/12 15:28	7439-95-4	
Potassium, Dissolved	2320000	ug/L	50000	6410	100	11/05/12 11:00	11/07/12 12:49	7440-09-7	
Sodium, Dissolved	13600	ug/L	500	40.1	1	11/05/12 11:00	11/06/12 15:28	7440-23-5	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.6J	ug/L	5.0	0.70	5	11/06/12 16:40	11/07/12 16:31	7440-38-2	
Cadmium	5.9	ug/L	2.5	0.48	5	11/06/12 16:40	11/07/12 16:31	7440-43-9	
Chromium	2.0J	ug/L	5.0	0.55	5	11/06/12 16:40	11/07/12 16:31	7440-47-3	
Cobalt	0.62J	ug/L	5.0	0.24	5	11/06/12 16:40	11/07/12 16:31	7440-48-4	
Copper	64.8	ug/L	5.0	2.2	5	11/06/12 16:40	11/07/12 16:31	7440-50-8	
Lead	49.5	ug/L	5.0	0.26	5	11/06/12 16:40	11/07/12 16:31	7439-92-1	
Manganese	577	ug/L	5.0	1.2	5	11/06/12 16:40	11/07/12 16:31	7439-96-5	
Nickel	2.4J	ug/L	5.0	1.8	5	11/06/12 16:40	11/07/12 16:31	7440-02-0	
Selenium	ND	ug/L	5.0	1.8	5	11/06/12 16:40	11/07/12 16:31	7782-49-2	D3
Zinc	1360	ug/L	50.0	8.0	5	11/06/12 16:40	11/07/12 16:31	7440-66-6	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.80J	ug/L	5.0	0.70	5	11/06/12 16:40	11/07/12 15:09	7440-38-2	
Cadmium, Dissolved	1.2J	ug/L	2.5	0.48	5	11/06/12 16:40	11/07/12 15:09	7440-43-9	
Chromium, Dissolved	0.96J	ug/L	5.0	0.55	5	11/06/12 16:40	11/07/12 15:09	7440-47-3	
Cobalt, Dissolved	0.30J	ug/L	5.0	0.24	5	11/06/12 16:40	11/07/12 15:09	7440-48-4	
Copper, Dissolved	52.2	ug/L	5.0	2.2	5	11/06/12 16:40	11/07/12 15:09	7440-50-8	
Lead, Dissolved	9.2	ug/L	5.0	0.26	5	11/06/12 16:40	11/07/12 15:09	7439-92-1	
Manganese, Dissolved	161	ug/L	5.0	1.2	5	11/06/12 16:40	11/07/12 15:09	7439-96-5	
Nickel, Dissolved	2.5J	ug/L	5.0	1.8	5	11/06/12 16:40	11/07/12 15:09	7440-02-0	
Selenium, Dissolved	ND	ug/L	5.0	1.8	5	11/06/12 16:40	11/07/12 15:09	7782-49-2	D3
Zinc, Dissolved	141	ug/L	50.0	8.0	5	11/06/12 16:40	11/07/12 15:09	7440-66-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	400J	mg/L	600	36.0	30	11/05/12 11:57			
Alkalinity, Carbonate (CaCO3)	2500	mg/L	600	36.0	30	11/05/12 11:57			
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	600	36.0	30	11/05/12 11:57			
Alkalinity, Total as CaCO3	2900	mg/L	600	36.0	30	11/05/12 11:57			

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132532

Sample: 517SHAFT465121031		Lab ID: 60132532003		Collected: 10/31/12 15:45		Received: 11/02/12 10:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.078	1		11/03/12 16:33	24959-67-9	
Chloride	4.1	mg/L	1.0	0.50	1		11/03/12 16:33	16887-00-6	
Fluoride	1.6	mg/L	0.20	0.011	1		11/03/12 16:33	16984-48-8	
Sulfate	426	mg/L	50.0	6.0	50		11/03/12 16:50	14808-79-8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132532

QC Batch: MPRP/20329 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60132532001, 60132532002, 60132532003

METHOD BLANK: 1093378 Matrix: Water

Associated Lab Samples: 60132532001, 60132532002, 60132532003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	ug/L	ND	100	11/07/12 12:21	
Iron	ug/L	36.6J	50.0	11/07/12 12:21	
Magnesium	ug/L	ND	50.0	11/07/12 12:21	
Potassium	ug/L	ND	500	11/07/12 12:21	
Sodium	ug/L	ND	500	11/07/12 12:21	

LABORATORY CONTROL SAMPLE: 1093379

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	9970	100	85-115	
Iron	ug/L	10000	10200	102	85-115	
Magnesium	ug/L	10000	10100	101	85-115	
Potassium	ug/L	10000	9930	99	85-115	
Sodium	ug/L	10000	10100	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1093380 1093381

Parameter	Units	60132530001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	228000	10000	10000	234000	238000	54	100	70-130	2	9	M1
Iron	ug/L	3840	10000	10000	14100	14300	102	105	70-130	2	10	
Magnesium	ug/L	19900	10000	10000	29300	30100	94	102	70-130	2	9	
Potassium	ug/L	60800	10000	10000	70700	72500	98	116	70-130	3	7	
Sodium	ug/L	11500	10000	10000	22100	22700	105	112	70-130	3	8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132532

QC Batch:	MPRP/20319	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Dissolved
Associated Lab Samples:	60132532001, 60132532002, 60132532003		

METHOD BLANK: 1093225 Matrix: Water

Associated Lab Samples: 60132532001, 60132532002, 60132532003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	11/06/12 15:18	
Iron, Dissolved	ug/L	ND	50.0	11/06/12 15:18	
Lithium, Dissolved	ug/L	ND	10.0	11/06/12 15:18	
Magnesium, Dissolved	ug/L	ND	50.0	11/06/12 15:18	
Potassium, Dissolved	ug/L	ND	500	11/06/12 15:18	
Sodium, Dissolved	ug/L	ND	500	11/06/12 15:18	

LABORATORY CONTROL SAMPLE: 1093226

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	10000	100	85-115	
Iron, Dissolved	ug/L	10000	10000	100	85-115	
Lithium, Dissolved	ug/L	1000	1040	104	85-115	
Magnesium, Dissolved	ug/L	10000	10300	103	85-115	
Potassium, Dissolved	ug/L	10000	10000	100	85-115	
Sodium, Dissolved	ug/L	10000	10300	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1093227 1093228

Parameter	Units	60132532002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium, Dissolved	ug/L	380000	10000	10000	390000	388000	102	77	70-130	1	9	
Iron, Dissolved	ug/L	1630000	10000	10000	1640000	1630000	60	-10	70-130	0	10 M6	
Lithium, Dissolved	ug/L	285	1000	1000	1240	1250	95	96	70-130	1	20	
Magnesium, Dissolved	ug/L	227000	10000	10000	232000	232000	49	50	70-130	0	9 M6	
Potassium, Dissolved	ug/L	7980	10000	10000	16500	16000	85	81	70-130	3	7	
Sodium, Dissolved	ug/L	5960	10000	10000	15500	15400	96	95	70-130	1	8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132532

QC Batch: MPRP/20331 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60132532001, 60132532002, 60132532003

METHOD BLANK: 1093386 Matrix: Water

Associated Lab Samples: 60132532001, 60132532002, 60132532003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	11/07/12 15:59	
Cadmium	ug/L	ND	0.50	11/07/12 15:59	
Chromium	ug/L	ND	1.0	11/07/12 15:59	
Cobalt	ug/L	ND	1.0	11/07/12 15:59	
Copper	ug/L	0.54J	1.0	11/07/12 15:59	
Lead	ug/L	0.20J	1.0	11/07/12 15:59	
Manganese	ug/L	ND	1.0	11/07/12 15:59	
Nickel	ug/L	ND	1.0	11/07/12 15:59	
Selenium	ug/L	ND	1.0	11/07/12 15:59	
Zinc	ug/L	ND	10.0	11/07/12 15:59	

LABORATORY CONTROL SAMPLE: 1093387

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	41.2	103	85-115	
Cadmium	ug/L	40	41.1	103	85-115	
Chromium	ug/L	40	41.9	105	85-115	
Cobalt	ug/L	40	41.6	104	85-115	
Copper	ug/L	40	42.2	106	85-115	
Lead	ug/L	40	39.8	99	85-115	
Manganese	ug/L	40	40.7	102	85-115	
Nickel	ug/L	40	42.2	105	85-115	
Selenium	ug/L	40	41.5	104	85-115	
Zinc	ug/L	100	104	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1093388 1093389

Parameter	Units	60132532002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	ND	40	40	ND	ND	0	0	70-130		20	M6
Cadmium	ug/L	1500	40	40	1590	1560	235	150	70-130	2	20	M6
Chromium	ug/L	212J	40	40	256J	202J	110	-25	70-130		20	M6
Cobalt	ug/L	235J	40	40	250J	238J	38	8	70-130		20	M6
Copper	ug/L	27200	40	40	26900	27300	-900	250	70-130	2	20	M6
Lead	ug/L	388J	40	40	428J	422J	100	85	70-130		20	
Manganese	ug/L	112000	40	40	113000	112000	1250	-2000	70-130	1	20	M6
Nickel	ug/L	513J	40	40	474J	507J	-98	-15	70-130		20	M6
Selenium	ug/L	ND	40	40	ND	ND	238	118	70-130		20	M6
Zinc	ug/L	222000	100	100	218000	220000	-3600	-2500	70-130	1	20	M6

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132532

QC Batch: MPRP/20330 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60132532001, 60132532002, 60132532003

METHOD BLANK: 1093382 Matrix: Water

Associated Lab Samples: 60132532001, 60132532002, 60132532003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	11/07/12 14:36	
Cadmium, Dissolved	ug/L	ND	0.50	11/07/12 14:36	
Chromium, Dissolved	ug/L	ND	1.0	11/07/12 14:36	
Cobalt, Dissolved	ug/L	ND	1.0	11/07/12 14:36	
Copper, Dissolved	ug/L	ND	1.0	11/07/12 14:36	
Lead, Dissolved	ug/L	0.17J	1.0	11/07/12 14:36	
Manganese, Dissolved	ug/L	ND	1.0	11/07/12 14:36	
Nickel, Dissolved	ug/L	ND	1.0	11/07/12 14:36	
Selenium, Dissolved	ug/L	ND	1.0	11/07/12 14:36	
Zinc, Dissolved	ug/L	ND	10.0	11/07/12 14:36	

LABORATORY CONTROL SAMPLE: 1093383

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	41.1	103	85-115	
Cadmium, Dissolved	ug/L	40	41.0	102	85-115	
Chromium, Dissolved	ug/L	40	41.9	105	85-115	
Cobalt, Dissolved	ug/L	40	41.7	104	85-115	
Copper, Dissolved	ug/L	40	42.1	105	85-115	
Lead, Dissolved	ug/L	40	40.1	100	85-115	
Manganese, Dissolved	ug/L	40	40.4	101	85-115	
Nickel, Dissolved	ug/L	40	42.4	106	85-115	
Selenium, Dissolved	ug/L	40	41.6	104	85-115	
Zinc, Dissolved	ug/L	100	103	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1093384 1093385

Parameter	Units	60132530001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	ND	40	40	40.0	38.8	100	97	70-130	3	20	
Cadmium, Dissolved	ug/L	13.2	40	40	55.0	54.0	104	102	70-130	2	20	
Chromium, Dissolved	ug/L	ND	40	40	41.3	41.0	103	103	70-130	1	20	
Cobalt, Dissolved	ug/L	2.4J	40	40	42.6	42.7	100	101	70-130	0	20	
Copper, Dissolved	ug/L	3.3J	40	40	44.5	43.1	103	100	70-130	3	20	
Lead, Dissolved	ug/L	0.88J	40	40	40.8	40.8	100	100	70-130	0	20	
Manganese, Dissolved	ug/L	1690	40	40	1750	1730	169	101	70-130	2	20 M1	
Nickel, Dissolved	ug/L	ND	40	40	40.4	41.7	97	100	70-130	3	20	
Selenium, Dissolved	ug/L	ND	40	40	38.5	39.8	96	100	70-130	3	20	
Zinc, Dissolved	ug/L	2600	100	100	2730	2690	133	90	70-130	2	20 M1	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132532

QC Batch: WET/38052 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60132532001, 60132532002, 60132532003

METHOD BLANK: 1093091 Matrix: Water

Associated Lab Samples: 60132532001, 60132532002, 60132532003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	11/05/12 09:32	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	11/05/12 09:32	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	11/05/12 09:32	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	11/05/12 09:32	

LABORATORY CONTROL SAMPLE: 1093092

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	506	101	90-110	

SAMPLE DUPLICATE: 1093093

Parameter	Units	60132434001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	115	108	6	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	115	108	6	9	

SAMPLE DUPLICATE: 1093094

Parameter	Units	60132263027 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	182	184	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	182	184	1	9	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132532

QC Batch: WETA/22341 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60132532001, 60132532002, 60132532003

METHOD BLANK: 1092996 Matrix: Water

Associated Lab Samples: 60132532001, 60132532002, 60132532003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	11/03/12 13:36	
Chloride	mg/L	ND	1.0	11/03/12 13:36	
Fluoride	mg/L	ND	0.20	11/03/12 13:36	
Sulfate	mg/L	ND	1.0	11/03/12 13:36	

METHOD BLANK: 1093082 Matrix: Water

Associated Lab Samples: 60132532001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.0	11/05/12 11:28	

LABORATORY CONTROL SAMPLE: 1092997

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.9	98	90-110	
Chloride	mg/L	5	4.9	98	90-110	
Fluoride	mg/L	2.5	2.5	99	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

LABORATORY CONTROL SAMPLE: 1093083

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	5.2	103	90-110	

MATRIX SPIKE SAMPLE: 1092998

Parameter	Units	60132537001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	25000	24100	96	75-119	
Chloride	mg/L	68300	25000	87200	75	64-118	
Fluoride	mg/L	ND	12500	11500	92	75-110	
Sulfate	mg/L	15400	25000	38400	92	61-119	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132532

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1092999 1093000											
Parameter	Units	60132537002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Bromide	mg/L	ND	25000	25000	23800	24200	95	97	75-119	2	10
Chloride	mg/L	57500	25000	25000	80600	80900	92	94	64-118	0	12
Fluoride	mg/L	ND	12500	12500	11500	11600	92	93	75-110	1	10
Sulfate	mg/L	16800	25000	25000	40400	40600	94	95	61-119	0	10

QUALIFIERS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132532

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132532

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60132532001	BLAINEOBF121031	EPA 200.7	MPRP/20329	EPA 200.7	ICP/16603
60132532002	BLAINEIBF121031	EPA 200.7	MPRP/20329	EPA 200.7	ICP/16603
60132532003	517SHAFT465121031	EPA 200.7	MPRP/20329	EPA 200.7	ICP/16603
60132532001	BLAINEOBF121031	EPA 200.7	MPRP/20319	EPA 200.7	ICP/16596
60132532002	BLAINEIBF121031	EPA 200.7	MPRP/20319	EPA 200.7	ICP/16596
60132532003	517SHAFT465121031	EPA 200.7	MPRP/20319	EPA 200.7	ICP/16596
60132532001	BLAINEOBF121031	EPA 200.8	MPRP/20331	EPA 200.8	ICPM/1809
60132532002	BLAINEIBF121031	EPA 200.8	MPRP/20331	EPA 200.8	ICPM/1809
60132532003	517SHAFT465121031	EPA 200.8	MPRP/20331	EPA 200.8	ICPM/1809
60132532001	BLAINEOBF121031	EPA 200.8	MPRP/20330	EPA 200.8	ICPM/1808
60132532002	BLAINEIBF121031	EPA 200.8	MPRP/20330	EPA 200.8	ICPM/1808
60132532003	517SHAFT465121031	EPA 200.8	MPRP/20330	EPA 200.8	ICPM/1808
60132532001	BLAINEOBF121031	SM 2320B	WET/38052		
60132532002	BLAINEIBF121031	SM 2320B	WET/38052		
60132532003	517SHAFT465121031	SM 2320B	WET/38052		
60132532001	BLAINEOBF121031	EPA 300.0	WETA/22341		
60132532002	BLAINEIBF121031	EPA 300.0	WETA/22341		
60132532003	517SHAFT465121031	EPA 300.0	WETA/22341		

November 08, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60132597

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on November 03, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132597

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

Page 2 of 15

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SAMPLE SUMMARY

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132597

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60132597001	DR3A1211020600	Water	11/02/12 06:00	11/03/12 09:00

REPORT OF LABORATORY ANALYSIS

Page 3 of 15

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SAMPLE ANALYTE COUNT

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132597

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60132597001	DR3A1211020600	EPA 200.7	JGP	1
		EPA 200.8	SMW	4
		EPA 200.8	SMW	4
		SM 2320B	DJR	4

REPORT OF LABORATORY ANALYSIS

Page 4 of 15

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132597

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: November 08, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132597

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 08, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

Page 6 of 15

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132597

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: November 08, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20330

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60132530001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1093384)
 - Manganese, Dissolved
 - Zinc, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

Page 7 of 15

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132597

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: November 08, 2012

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

Page 8 of 15

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ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132597

Sample: DR3A1211020600 Lab ID: 60132597001 Collected: 11/02/12 06:00 Received: 11/03/12 09:00 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Potassium	60700	ug/L	500	64.1	1	11/05/12 16:40	11/07/12 12:33	7440-09-7	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Cadmium	14.0	ug/L	2.5	0.48	5	11/06/12 16:40	11/07/12 16:35	7440-43-9	
Iron	3890	ug/L	250	23.0	5	11/06/12 16:40	11/07/12 16:35	7439-89-6	
Manganese	1700	ug/L	5.0	1.2	5	11/06/12 16:40	11/07/12 16:35	7439-96-5	
Zinc	2900	ug/L	50.0	8.0	5	11/06/12 16:40	11/07/12 16:35	7440-66-6	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Cadmium, Dissolved	13.1	ug/L	2.5	0.48	5	11/06/12 16:40	11/07/12 15:13	7440-43-9	
Iron, Dissolved	99.5J	ug/L	250	23.0	5	11/06/12 16:40	11/07/12 15:13	7439-89-6	
Manganese, Dissolved	1690	ug/L	5.0	1.2	5	11/06/12 16:40	11/07/12 15:13	7439-96-5	
Zinc, Dissolved	2740	ug/L	50.0	8.0	5	11/06/12 16:40	11/07/12 15:13	7440-66-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	115	mg/L	20.0	1.2	1		11/05/12 10:13		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		11/05/12 10:13		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		11/05/12 10:13		
Alkalinity, Total as CaCO ₃	115	mg/L	20.0	1.2	1		11/05/12 10:13		

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132597

QC Batch: MPRP/20329

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60132597001

METHOD BLANK: 1093378

Matrix: Water

Associated Lab Samples: 60132597001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Potassium	ug/L	ND	500	11/07/12 12:21	

LABORATORY CONTROL SAMPLE: 1093379

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Potassium	ug/L	10000	9930	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1093380 1093381

Parameter	Units	60132530001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Potassium	ug/L	60800	10000	10000	70700	72500	98	116	70-130	3	7

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Project No.: 60132597

QC Batch:	MPRP/20331	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET
Associated Lab Samples:	60132597001		

METHOD BLANK: 1093386 Matrix: Water

Associated Lab Samples: 60132597001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium	ug/L	ND	0.50	11/07/12 15:59	
Iron	ug/L	ND	50.0	11/07/12 15:59	
Manganese	ug/L	ND	1.0	11/07/12 15:59	
Zinc	ug/L	ND	10.0	11/07/12 15:59	

LABORATORY CONTROL SAMPLE: 1093387

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	40	41.1	103	85-115	
Iron	ug/L	1000	1040	104	85-115	
Manganese	ug/L	40	40.7	102	85-115	
Zinc	ug/L	100	104	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1093388 1093389

Parameter	Units	60132532002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium	ug/L	1500	40	40	1590	1560	235	150	70-130	2	20	M6
Iron	ug/L	1800000	1000	1000	1800000	1790000	0	-800	70-130	0	20	M6
Manganese	ug/L	112000	40	40	113000	112000	1250	-2000	70-130	1	20	M6
Zinc	ug/L	222000	100	100	218000	220000	-3600	-2500	70-130	1	20	M6

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132597

QC Batch:	MPRP/20330	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET Dissolved
Associated Lab Samples:	60132597001		

METHOD BLANK: 1093382 Matrix: Water

Associated Lab Samples: 60132597001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium, Dissolved	ug/L	ND	0.50	11/07/12 14:36	
Iron, Dissolved	ug/L	ND	50.0	11/07/12 14:36	
Manganese, Dissolved	ug/L	ND	1.0	11/07/12 14:36	
Zinc, Dissolved	ug/L	ND	10.0	11/07/12 14:36	

LABORATORY CONTROL SAMPLE: 1093383

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium, Dissolved	ug/L	40	41.0	102	85-115	
Iron, Dissolved	ug/L	1000	1040	104	85-115	
Manganese, Dissolved	ug/L	40	40.4	101	85-115	
Zinc, Dissolved	ug/L	100	103	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1093384 1093385

Parameter	Units	60132530001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium, Dissolved	ug/L	13.2	40	40	55.0	54.0	104	102	70-130	2	20	
Iron, Dissolved	ug/L	80.3J	1000	1000	1110	1120	103	104	70-130	1	20	
Manganese, Dissolved	ug/L	1690	40	40	1750	1730	169	101	70-130	2	20 M1	
Zinc, Dissolved	ug/L	2600	100	100	2730	2690	133	90	70-130	2	20 M1	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132597

QC Batch: WET/38052

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60132597001

METHOD BLANK: 1093091

Matrix: Water

Associated Lab Samples: 60132597001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	11/05/12 09:32	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	11/05/12 09:32	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	11/05/12 09:32	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	11/05/12 09:32	

LABORATORY CONTROL SAMPLE: 1093092

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	506	101	90-110	

SAMPLE DUPLICATE: 1093093

Parameter	Units	60132434001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	115	108	6	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	115	108	6	9	

SAMPLE DUPLICATE: 1093094

Parameter	Units	60132263027 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	182	184	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	182	184	1	9	

QUALIFIERS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132597

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132597

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60132597001	DR3A1211020600	EPA 200.7	MPRP/20329	EPA 200.7	ICP/16603
60132597001	DR3A1211020600	EPA 200.8	MPRP/20331	EPA 200.8	ICPM/1809
60132597001	DR3A1211020600	EPA 200.8	MPRP/20330	EPA 200.8	ICPM/1808
60132597001	DR3A1211020600	SM 2320B	WET/38052		

November 13, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60132676

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on November 06, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132676

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

Page 2 of 22

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SAMPLE SUMMARY

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132676

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60132676001	DR3A1211040600	Water	11/04/12 06:00	11/06/12 10:15

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132676

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60132676001	DR3A1211040600	EPA 200.7	JGP	5
		EPA 200.7	JGP	6
		EPA 200.8	SMW	10
		EPA 200.8	SMW	10
		SM 2320B	DJR	4
		EPA 300.0	AJM	4

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132676

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: November 13, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20359

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60132676001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1094322)
- Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132676

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: November 13, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20361

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60132676001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1094356)
 - Calcium, Dissolved
- MSD (Lab ID: 1094357)
 - Calcium, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132676

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 13, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20360

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60132676001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1094339)
 - Manganese
- MSD (Lab ID: 1094340)
 - Manganese
 - Zinc

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20360

B: Analyte was detected in the associated method blank.

- DR3A1211040600 (Lab ID: 60132676001)
 - Lead

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132676

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 13, 2012

Analyte Comments:

QC Batch: MPRP/20360

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1211040600 (Lab ID: 60132676001)
 - Arsenic
 - Nickel
 - Selenium

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132676

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: November 13, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20356

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60132677001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1094300)
 - Manganese, Dissolved
 - Zinc, Dissolved
- MSD (Lab ID: 1094301)
 - Manganese, Dissolved
 - Zinc, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132676

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: November 13, 2012

Analyte Comments:

QC Batch: MPRP/20356

B: Analyte was detected in the associated method blank.

- DR3A1211040600 (Lab ID: 60132676001)
 - Lead, Dissolved

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1211040600 (Lab ID: 60132676001)
 - Arsenic, Dissolved
 - Chromium, Dissolved
 - Copper, Dissolved
 - Nickel, Dissolved
 - Selenium, Dissolved
- DR3A1211040600 (Lab ID: 60132676001)
 - Selenium, Dissolved

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132676

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: November 13, 2012

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132676

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: November 13, 2012

General Information:

1 sample was analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132676

Sample: DR3A1211040600 Lab ID: 60132676001 Collected: 11/04/12 06:00 Received: 11/06/12 10:15 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	223000	ug/L	100	35.8	1	11/07/12 16:30	11/08/12 12:13	7440-70-2	M1
Iron	4060	ug/L	50.0	17.2	1	11/07/12 16:30	11/08/12 12:13	7439-89-6	
Magnesium	19200	ug/L	50.0	17.2	1	11/07/12 16:30	11/08/12 12:13	7439-95-4	
Potassium	44200	ug/L	500	64.1	1	11/07/12 16:30	11/08/12 12:13	7440-09-7	
Sodium	11200	ug/L	500	40.1	1	11/07/12 16:30	11/08/12 12:13	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	226000	ug/L	100	35.8	1	11/07/12 16:30	11/08/12 12:39	7440-70-2	D9,M1
Iron, Dissolved	ND	ug/L	50.0	17.2	1	11/07/12 16:30	11/08/12 12:39	7439-89-6	
Lithium, Dissolved	70.5	ug/L	10.0	3.7	1	11/07/12 16:30	11/08/12 12:39	7439-93-2	
Magnesium, Dissolved	19700	ug/L	50.0	17.2	1	11/07/12 16:30	11/08/12 12:39	7439-95-4	D9
Potassium, Dissolved	46100	ug/L	500	64.1	1	11/07/12 16:30	11/08/12 12:39	7440-09-7	D9
Sodium, Dissolved	11800	ug/L	500	40.1	1	11/07/12 16:30	11/08/12 12:39	7440-23-5	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	ND	ug/L	5.0	0.70	5	11/07/12 17:30	11/08/12 19:16	7440-38-2	D3
Cadmium	14.4	ug/L	2.5	0.48	5	11/07/12 17:30	11/08/12 19:16	7440-43-9	
Chromium	0.76J	ug/L	5.0	0.55	5	11/07/12 17:30	11/08/12 19:16	7440-47-3	
Cobalt	2.6J	ug/L	5.0	0.24	5	11/07/12 17:30	11/08/12 19:16	7440-48-4	
Copper	36.8	ug/L	5.0	2.2	5	11/07/12 17:30	11/08/12 19:16	7440-50-8	
Lead	2.6J	ug/L	5.0	0.26	5	11/07/12 17:30	11/08/12 19:16	7439-92-1	B
Manganese	1750	ug/L	5.0	1.2	5	11/07/12 17:30	11/08/12 19:16	7439-96-5	M1
Nickel	ND	ug/L	5.0	1.8	5	11/07/12 17:30	11/08/12 19:16	7440-02-0	D3
Selenium	ND	ug/L	5.0	1.8	5	11/07/12 17:30	11/08/12 19:16	7782-49-2	D3
Zinc	2810	ug/L	50.0	8.0	5	11/07/12 17:30	11/08/12 19:16	7440-66-6	M1
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.40J	ug/L	2.0	0.28	2	11/07/12 12:20	11/12/12 13:50	7440-38-2	D3
Cadmium, Dissolved	13.4	ug/L	2.5	0.48	5	11/07/12 12:20	11/09/12 17:33	7440-43-9	
Chromium, Dissolved	ND	ug/L	5.0	0.55	5	11/07/12 12:20	11/09/12 17:33	7440-47-3	D3
Cobalt, Dissolved	1.9J	ug/L	5.0	0.24	5	11/07/12 12:20	11/09/12 17:33	7440-48-4	
Copper, Dissolved	ND	ug/L	5.0	2.2	5	11/07/12 12:20	11/09/12 17:33	7440-50-8	D3
Lead, Dissolved	0.80J	ug/L	5.0	0.26	5	11/07/12 12:20	11/09/12 17:33	7439-92-1	B
Manganese, Dissolved	1720	ug/L	5.0	1.2	5	11/07/12 12:20	11/09/12 17:33	7439-96-5	
Nickel, Dissolved	ND	ug/L	5.0	1.8	5	11/07/12 12:20	11/09/12 17:33	7440-02-0	D3
Selenium, Dissolved	ND	ug/L	2.0	0.70	2	11/07/12 12:20	11/12/12 13:50	7782-49-2	D3
Zinc, Dissolved	2530	ug/L	50.0	8.0	5	11/07/12 12:20	11/09/12 17:33	7440-66-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	108	mg/L	20.0	1.2	1		11/08/12 08:58		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		11/08/12 08:58		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		11/08/12 08:58		
Alkalinity, Total as CaCO3	108	mg/L	20.0	1.2	1		11/08/12 08:58		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132676

Sample: DR3A1211040600		Lab ID: 60132676001		Collected: 11/04/12 06:00		Received: 11/06/12 10:15		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.31J	mg/L	1.0	0.078	1		11/07/12 05:04	24959-67-9	
Chloride	0.99J	mg/L	1.0	0.50	1		11/07/12 05:04	16887-00-6	
Fluoride	2.3	mg/L	0.20	0.011	1		11/07/12 05:04	16984-48-8	
Sulfate	651	mg/L	50.0	6.0	50		11/07/12 05:22	14808-79-8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132676

QC Batch: MPRP/20359

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60132676001

METHOD BLANK: 1094319

Matrix: Water

Associated Lab Samples: 60132676001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	ug/L	ND	100	11/08/12 12:09	
Iron	ug/L	ND	50.0	11/08/12 12:09	
Magnesium	ug/L	ND	50.0	11/08/12 12:09	
Potassium	ug/L	92.7J	500	11/08/12 12:09	
Sodium	ug/L	ND	500	11/08/12 12:09	

LABORATORY CONTROL SAMPLE: 1094320

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	9700	97	85-115	
Iron	ug/L	10000	9990	100	85-115	
Magnesium	ug/L	10000	10000	100	85-115	
Potassium	ug/L	10000	9880	99	85-115	
Sodium	ug/L	10000	10100	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1094321

1094322

Parameter	Units	60132676001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	223000	10000	10000	235000	226000	116	27	70-130	4	9	M1
Iron	ug/L	4060	10000	10000	14000	13800	99	97	70-130	1	10	
Magnesium	ug/L	19200	10000	10000	29000	28600	98	94	70-130	1	9	
Potassium	ug/L	44200	10000	10000	55400	53500	112	92	70-130	4	7	
Sodium	ug/L	11200	10000	10000	22000	21400	107	102	70-130	2	8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132676

QC Batch: MPRP/20361

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60132676001

METHOD BLANK: 1094354

Matrix: Water

Associated Lab Samples: 60132676001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	11/08/12 12:34	
Iron, Dissolved	ug/L	ND	50.0	11/08/12 12:34	
Lithium, Dissolved	ug/L	ND	10.0	11/08/12 12:34	
Magnesium, Dissolved	ug/L	ND	50.0	11/08/12 12:34	
Potassium, Dissolved	ug/L	84.2J	500	11/08/12 12:34	
Sodium, Dissolved	ug/L	ND	500	11/08/12 12:34	

LABORATORY CONTROL SAMPLE: 1094355

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	10100	101	85-115	
Iron, Dissolved	ug/L	10000	10400	104	85-115	
Lithium, Dissolved	ug/L	1000	1040	104	85-115	
Magnesium, Dissolved	ug/L	10000	10300	103	85-115	
Potassium, Dissolved	ug/L	10000	10200	102	85-115	
Sodium, Dissolved	ug/L	10000	10400	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1094356

1094357

Parameter	Units	60132676001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium, Dissolved	ug/L	226000	10000	10000	231000	227000	49	17	70-130	1	9	M1
Iron, Dissolved	ug/L	ND	10000	10000	10000	9950	100	99	70-130	1	10	
Lithium, Dissolved	ug/L	70.5	1000	1000	1160	1180	109	111	70-130	2	20	
Magnesium, Dissolved	ug/L	19700	10000	10000	28800	28800	91	92	70-130	0	9	
Potassium, Dissolved	ug/L	46100	10000	10000	56400	56900	103	108	70-130	1	7	
Sodium, Dissolved	ug/L	11800	10000	10000	22600	22900	108	111	70-130	1	8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132676

QC Batch:	MPRP/20360	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET
Associated Lab Samples:	60132676001		

METHOD BLANK: 1094337 Matrix: Water

Associated Lab Samples: 60132676001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	11/08/12 19:08	
Cadmium	ug/L	ND	0.50	11/08/12 19:08	
Chromium	ug/L	ND	1.0	11/08/12 19:08	
Cobalt	ug/L	ND	1.0	11/08/12 19:08	
Copper	ug/L	ND	1.0	11/08/12 19:08	
Lead	ug/L	0.15J	1.0	11/08/12 19:08	
Manganese	ug/L	ND	1.0	11/08/12 19:08	
Nickel	ug/L	ND	1.0	11/08/12 19:08	
Selenium	ug/L	ND	1.0	11/08/12 19:08	
Zinc	ug/L	ND	10.0	11/08/12 19:08	

LABORATORY CONTROL SAMPLE: 1094338

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	40.5	101	85-115	
Cadmium	ug/L	40	41.1	103	85-115	
Chromium	ug/L	40	40.0	100	85-115	
Cobalt	ug/L	40	39.5	99	85-115	
Copper	ug/L	40	39.3	98	85-115	
Lead	ug/L	40	39.9	100	85-115	
Manganese	ug/L	40	40.9	102	85-115	
Nickel	ug/L	40	39.0	98	85-115	
Selenium	ug/L	40	41.5	104	85-115	
Zinc	ug/L	100	107	107	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1094339 1094340

Parameter	Units	60132676001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	ND	40	40	40.6	41.1	101	102	70-130	1	20	
Cadmium	ug/L	14.4	40	40	54.9	53.9	101	99	70-130	2	20	
Chromium	ug/L	0.76J	40	40	39.6	39.3	97	96	70-130	1	20	
Cobalt	ug/L	2.6J	40	40	41.3	40.5	97	95	70-130	2	20	
Copper	ug/L	36.8	40	40	73.0	74.5	90	94	70-130	2	20	
Lead	ug/L	2.6J	40	40	42.2	42.0	99	99	70-130	0	20	
Manganese	ug/L	1750	40	40	1770	1780	39	61	70-130	1	20 M1	
Nickel	ug/L	ND	40	40	39.7	36.8	97	90	70-130	7	20	
Selenium	ug/L	ND	40	40	40.3	42.1	100	104	70-130	4	20	
Zinc	ug/L	2810	100	100	2890	2860	82	52	70-130	1	20 M1	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132676

QC Batch: MPRP/20356

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60132676001

METHOD BLANK: 1094298

Matrix: Water

Associated Lab Samples: 60132676001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	11/12/12 13:42	
Cadmium, Dissolved	ug/L	ND	0.50	11/09/12 17:21	
Chromium, Dissolved	ug/L	ND	1.0	11/09/12 17:21	
Cobalt, Dissolved	ug/L	ND	1.0	11/09/12 17:21	
Copper, Dissolved	ug/L	ND	1.0	11/09/12 17:21	
Lead, Dissolved	ug/L	0.18J	1.0	11/09/12 17:21	
Manganese, Dissolved	ug/L	ND	1.0	11/09/12 17:21	
Nickel, Dissolved	ug/L	ND	1.0	11/09/12 17:21	
Selenium, Dissolved	ug/L	ND	1.0	11/12/12 13:42	
Zinc, Dissolved	ug/L	ND	10.0	11/09/12 17:21	

LABORATORY CONTROL SAMPLE: 1094299

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	39.9	100	85-115	
Cadmium, Dissolved	ug/L	40	41.0	103	85-115	
Chromium, Dissolved	ug/L	40	38.9	97	85-115	
Cobalt, Dissolved	ug/L	40	38.7	97	85-115	
Copper, Dissolved	ug/L	40	39.6	99	85-115	
Lead, Dissolved	ug/L	40	39.7	99	85-115	
Manganese, Dissolved	ug/L	40	39.0	98	85-115	
Nickel, Dissolved	ug/L	40	38.8	97	85-115	
Selenium, Dissolved	ug/L	40	42.4	106	85-115	
Zinc, Dissolved	ug/L	100	98.8	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1094300

1094301

Parameter	Units	60132677001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	ND	40	40	38.8	40.3	96	100	70-130	4	20	
Cadmium, Dissolved	ug/L	13.7	40	40	52.4	53.6	97	100	70-130	2	20	
Chromium, Dissolved	ug/L	ND	40	40	37.7	38.5	93	95	70-130	2	20	
Cobalt, Dissolved	ug/L	2.1J	40	40	39.0	39.7	92	94	70-130	2	20	
Copper, Dissolved	ug/L	ND	40	40	38.3	40.1	91	95	70-130	5	20	
Lead, Dissolved	ug/L	0.80J	40	40	40.3	41.0	99	101	70-130	2	20	
Manganese, Dissolved	ug/L	1690	40	40	1710	1700	56	29	70-130	1	20 M1	
Nickel, Dissolved	ug/L	2.3J	40	40	39.2	38.9	92	91	70-130	1	20	
Selenium, Dissolved	ug/L	ND	40	40	37.1	40.5	93	101	70-130	9	20	
Zinc, Dissolved	ug/L	2580	100	100	2650	2650	66	66	70-130	0	20 M1	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132676

QC Batch: WET/38114

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60132676001

METHOD BLANK: 1094453

Matrix: Water

Associated Lab Samples: 60132676001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	11/08/12 08:48	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	11/08/12 08:48	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	11/08/12 08:48	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	11/08/12 08:48	

LABORATORY CONTROL SAMPLE: 1094454

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	498	100	90-110	

SAMPLE DUPLICATE: 1094455

Parameter	Units	60132676001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	108	109	0	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	108	109	0	9	

SAMPLE DUPLICATE: 1094456

Parameter	Units	60132680004 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	161	161	0	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	161	161	0	9	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132676

QC Batch: WETA/22366

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60132676001

METHOD BLANK: 1093885

Matrix: Water

Associated Lab Samples: 60132676001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	11/07/12 04:29	
Chloride	mg/L	ND	1.0	11/07/12 04:29	
Fluoride	mg/L	ND	0.20	11/07/12 04:29	
Sulfate	mg/L	ND	1.0	11/07/12 04:29	

LABORATORY CONTROL SAMPLE: 1093886

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.0	99	90-110	
Chloride	mg/L	5	4.9	98	90-110	
Fluoride	mg/L	2.5	2.5	99	90-110	
Sulfate	mg/L	5	5.1	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1093887

1093888

Parameter	Units	60132676001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	0.31J	5	5	5.3	5.3	100	100	75-119	0	10	
Chloride	mg/L	0.99J	5	5	5.5	5.9	89	97	64-118	7	12	
Fluoride	mg/L	2.3	2.5	2.5	4.7	4.7	96	95	75-110	0	10	
Sulfate	mg/L	651	250	250	866	868	86	87	61-119	0	10	

QUALIFIERS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132676

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132676

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60132676001	DR3A1211040600	EPA 200.7	MPRP/20359	EPA 200.7	ICP/16626
60132676001	DR3A1211040600	EPA 200.7	MPRP/20361	EPA 200.7	ICP/16625
60132676001	DR3A1211040600	EPA 200.8	MPRP/20360	EPA 200.8	ICPM/1817
60132676001	DR3A1211040600	EPA 200.8	MPRP/20356	EPA 200.8	ICPM/1811
60132676001	DR3A1211040600	SM 2320B	WET/38114		
60132676001	DR3A1211040600	EPA 300.0	WETA/22366		

November 12, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60132677

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on November 06, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132677

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132677

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60132677001	DR3A1211030600	Water	11/03/12 06:00	11/06/12 10:15
60132677002	DR3A1211050600	Water	11/05/12 06:00	11/06/12 10:15

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132677

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60132677001	DR3A1211030600	EPA 200.7	JGP	1
		EPA 200.8	SMW	4
		EPA 200.8	SMW	4
		SM 2320B	DJR	4
60132677002	DR3A1211050600	EPA 200.7	JGP	1
		EPA 200.8	SMW	4
		EPA 200.8	SMW	4
		SM 2320B	DJR	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132677

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: November 12, 2012

General Information:

2 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132677

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 12, 2012

General Information:

2 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20360

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60132676001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1094339)
 - Manganese
- MSD (Lab ID: 1094340)
 - Manganese
 - Zinc

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132677

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: November 12, 2012

General Information:

2 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20356

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60132677001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1094300)
 - Manganese, Dissolved
 - Zinc, Dissolved
- MSD (Lab ID: 1094301)
 - Manganese, Dissolved
 - Zinc, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132677

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: November 12, 2012

General Information:

2 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132677

Sample: DR3A1211030600		Lab ID: 60132677001		Collected: 11/03/12 06:00		Received: 11/06/12 10:15		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Potassium	50600	ug/L	2500	320	5	11/07/12 16:30	11/08/12 12:22	7440-09-7	
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Manganese	1730	ug/L	5.0	1.2	5	11/07/12 17:30	11/08/12 19:32	7439-96-5	
Zinc	2820	ug/L	50.0	8.0	5	11/07/12 17:30	11/08/12 19:32	7440-66-6	
Cadmium	14.1	ug/L	2.5	0.48	5	11/07/12 17:30	11/08/12 19:32	7440-43-9	
Iron	3770	ug/L	250	23.0	5	11/07/12 17:30	11/08/12 19:32	7439-89-6	
200.8 MET ICPMS, Dissolved		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Manganese, Dissolved	1690	ug/L	5.0	1.2	5	11/07/12 12:20	11/09/12 17:41	7439-96-5	M1
Zinc, Dissolved	2580	ug/L	50.0	8.0	5	11/07/12 12:20	11/09/12 17:41	7440-66-6	M1
Cadmium, Dissolved	13.7	ug/L	2.5	0.48	5	11/07/12 12:20	11/09/12 17:41	7440-43-9	
Iron, Dissolved	74.8J	ug/L	250	23.0	5	11/07/12 12:20	11/09/12 17:41	7439-89-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	108	mg/L	20.0	1.2	1		11/08/12 09:07		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		11/08/12 09:07		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		11/08/12 09:07		
Alkalinity, Total as CaCO ₃	108	mg/L	20.0	1.2	1		11/08/12 09:07		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132677

Sample: DR3A1211050600		Lab ID: 60132677002		Collected: 11/05/12 06:00		Received: 11/06/12 10:15		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Potassium	38100	ug/L	2500	320	5	11/07/12 16:30	11/08/12 12:24	7440-09-7	
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Cadmium	14.4	ug/L	2.5	0.48	5	11/07/12 17:30	11/08/12 19:36	7440-43-9	
Iron	3770	ug/L	250	23.0	5	11/07/12 17:30	11/08/12 19:36	7439-89-6	
Manganese	1740	ug/L	5.0	1.2	5	11/07/12 17:30	11/08/12 19:36	7439-96-5	
Zinc	2770	ug/L	50.0	8.0	5	11/07/12 17:30	11/08/12 19:36	7440-66-6	
200.8 MET ICPMS, Dissolved		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Cadmium, Dissolved	13.2	ug/L	2.5	0.48	5	11/07/12 12:20	11/09/12 17:53	7440-43-9	
Iron, Dissolved	29.5J	ug/L	250	23.0	5	11/07/12 12:20	11/09/12 17:53	7439-89-6	
Manganese, Dissolved	1710	ug/L	5.0	1.2	5	11/07/12 12:20	11/09/12 17:53	7439-96-5	
Zinc, Dissolved	2540	ug/L	50.0	8.0	5	11/07/12 12:20	11/09/12 17:53	7440-66-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	108	mg/L	20.0	1.2	1		11/08/12 09:11		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		11/08/12 09:11		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		11/08/12 09:11		
Alkalinity, Total as CaCO ₃	108	mg/L	20.0	1.2	1		11/08/12 09:11		

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132677

QC Batch: MPRP/20359

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60132677001, 60132677002

METHOD BLANK: 1094319

Matrix: Water

Associated Lab Samples: 60132677001, 60132677002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Potassium	ug/L	92.7J	500	11/08/12 12:09	

LABORATORY CONTROL SAMPLE: 1094320

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Potassium	ug/L	10000	9880	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1094321

1094322

Parameter	Units	60132676001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Potassium	ug/L	44200	10000	10000	55400	53500	112	92	70-130	4	7	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132677

QC Batch: MPRP/20360 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60132677001, 60132677002

METHOD BLANK: 1094337 Matrix: Water

Associated Lab Samples: 60132677001, 60132677002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium	ug/L	ND	0.50	11/08/12 19:08	
Iron	ug/L	ND	50.0	11/08/12 19:08	
Manganese	ug/L	ND	1.0	11/08/12 19:08	
Zinc	ug/L	ND	10.0	11/08/12 19:08	

LABORATORY CONTROL SAMPLE: 1094338

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	40	41.1	103	85-115	
Iron	ug/L	1000	1010	101	85-115	
Manganese	ug/L	40	40.9	102	85-115	
Zinc	ug/L	100	107	107	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1094339 1094340

Parameter	Units	60132676001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium	ug/L	14.4	40	40	54.9	53.9	101	99	70-130	2	20	
Iron	ug/L	4020	1000	1000	4950	5000	93	98	70-130	1	20	
Manganese	ug/L	1750	40	40	1770	1780	39	61	70-130	1	20 M1	
Zinc	ug/L	2810	100	100	2890	2860	82	52	70-130	1	20 M1	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132677

QC Batch: MPRP/20356

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60132677001, 60132677002

METHOD BLANK: 1094298

Matrix: Water

Associated Lab Samples: 60132677001, 60132677002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium, Dissolved	ug/L	ND	0.50	11/09/12 17:21	
Iron, Dissolved	ug/L	ND	50.0	11/09/12 17:21	
Manganese, Dissolved	ug/L	ND	1.0	11/09/12 17:21	
Zinc, Dissolved	ug/L	ND	10.0	11/09/12 17:21	

LABORATORY CONTROL SAMPLE: 1094299

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium, Dissolved	ug/L	40	41.0	103	85-115	
Iron, Dissolved	ug/L	1000	971	97	85-115	
Manganese, Dissolved	ug/L	40	39.0	98	85-115	
Zinc, Dissolved	ug/L	100	98.8	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1094300

1094301

Parameter	Units	60132677001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium, Dissolved	ug/L	13.7	40	40	52.4	53.6	97	100	70-130	2	20	
Iron, Dissolved	ug/L	74.8J	1000	1000	1030	1040	96	97	70-130	1	20	
Manganese, Dissolved	ug/L	1690	40	40	1710	1700	56	29	70-130	1	20 M1	
Zinc, Dissolved	ug/L	2580	100	100	2650	2650	66	66	70-130	0	20 M1	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132677

QC Batch: WET/38114

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60132677001, 60132677002

METHOD BLANK: 1094453

Matrix: Water

Associated Lab Samples: 60132677001, 60132677002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	11/08/12 08:48	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	11/08/12 08:48	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	11/08/12 08:48	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	11/08/12 08:48	

LABORATORY CONTROL SAMPLE: 1094454

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	498	100	90-110	

SAMPLE DUPLICATE: 1094455

Parameter	Units	60132676001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	108	109	0	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	108	109	0	9	

SAMPLE DUPLICATE: 1094456

Parameter	Units	60132680004 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	161	161	0	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	161	161	0	9	

QUALIFIERS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132677

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132677

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60132677001	DR3A1211030600	EPA 200.7	MPRP/20359	EPA 200.7	ICP/16626
60132677002	DR3A1211050600	EPA 200.7	MPRP/20359	EPA 200.7	ICP/16626
60132677001	DR3A1211030600	EPA 200.8	MPRP/20360	EPA 200.8	ICPM/1817
60132677002	DR3A1211050600	EPA 200.8	MPRP/20360	EPA 200.8	ICPM/1817
60132677001	DR3A1211030600	EPA 200.8	MPRP/20356	EPA 200.8	ICPM/1811
60132677002	DR3A1211050600	EPA 200.8	MPRP/20356	EPA 200.8	ICPM/1811
60132677001	DR3A1211030600	SM 2320B	WET/38114		
60132677002	DR3A1211050600	SM 2320B	WET/38114		

November 12, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60132769

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on November 07, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132769

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

Page 2 of 15

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SAMPLE SUMMARY

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132769

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60132769001	DR3A1211060600	Water	11/06/12 06:00	11/07/12 10:20

REPORT OF LABORATORY ANALYSIS

Page 3 of 15

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SAMPLE ANALYTE COUNT

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132769

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60132769001	DR3A1211060600	EPA 200.7	JGP	1
		EPA 200.8	SMW	4
		EPA 200.8	SMW	4
		SM 2320B	DJR	4

REPORT OF LABORATORY ANALYSIS

Page 4 of 15

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132769

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: November 12, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132769

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 12, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20360

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60132676001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1094339)
 - Manganese
- MSD (Lab ID: 1094340)
 - Manganese
 - Zinc

Additional Comments:

REPORT OF LABORATORY ANALYSIS

Page 6 of 15

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132769

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: November 12, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20362

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60132769001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1094360)
 - Zinc, Dissolved
- MSD (Lab ID: 1094361)
 - Manganese, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

Page 7 of 15

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132769

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: November 12, 2012

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132769

Sample: DR3A1211060600		Lab ID: 60132769001		Collected: 11/06/12 06:00		Received: 11/07/12 10:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Potassium	35300	ug/L	2500	320	5	11/07/12 16:30	11/08/12 12:26	7440-09-7	
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Cadmium	14.5	ug/L	2.5	0.48	5	11/07/12 17:30	11/08/12 19:40	7440-43-9	
Iron	3810	ug/L	250	23.0	5	11/07/12 17:30	11/08/12 19:40	7439-89-6	
Manganese	1760	ug/L	5.0	1.2	5	11/07/12 17:30	11/08/12 19:40	7439-96-5	
Zinc	2800	ug/L	50.0	8.0	5	11/07/12 17:30	11/08/12 19:40	7440-66-6	
200.8 MET ICPMS, Dissolved		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Cadmium, Dissolved	13.7	ug/L	2.5	0.48	5	11/07/12 17:30	11/08/12 20:21	7440-43-9	
Iron, Dissolved	102J	ug/L	250	23.0	5	11/07/12 17:30	11/08/12 20:21	7439-89-6	
Manganese, Dissolved	1760	ug/L	5.0	1.2	5	11/07/12 17:30	11/08/12 20:21	7439-96-5	M1
Zinc, Dissolved	2700	ug/L	50.0	8.0	5	11/07/12 17:30	11/08/12 20:21	7440-66-6	M1
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	105	mg/L	20.0	1.2	1		11/08/12 09:16		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		11/08/12 09:16		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		11/08/12 09:16		
Alkalinity, Total as CaCO ₃	105	mg/L	20.0	1.2	1		11/08/12 09:16		

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132769

QC Batch: MPRP/20359

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60132769001

METHOD BLANK: 1094319

Matrix: Water

Associated Lab Samples: 60132769001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Potassium	ug/L	92.7J	500	11/08/12 12:09	

LABORATORY CONTROL SAMPLE: 1094320

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Potassium	ug/L	10000	9880	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1094321

1094322

Parameter	Units	60132676001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Potassium	ug/L	44200	10000	10000	55400	53500	112	92	70-130	4	7	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

QC Batch: MPRP/20360

QC Batch Method: EPA 200.8

Associated Lab Samples: 60132769001

Analysis Method: EPA 200.8

Analysis Description: 200.8 MET

METHOD BLANK: 1094337

Matrix: Water

Associated Lab Samples: 60132769001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium	ug/L	ND	0.50	11/08/12 19:08	
Iron	ug/L	ND	50.0	11/08/12 19:08	
Manganese	ug/L	ND	1.0	11/08/12 19:08	
Zinc	ug/L	ND	10.0	11/08/12 19:08	

LABORATORY CONTROL SAMPLE: 1094338

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	40	41.1	103	85-115	
Iron	ug/L	1000	1010	101	85-115	
Manganese	ug/L	40	40.9	102	85-115	
Zinc	ug/L	100	107	107	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1094339

1094340

Parameter	Units	60132676001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium	ug/L	14.4	40	40	54.9	53.9	101	99	70-130	2	20	
Iron	ug/L	4020	1000	1000	4950	5000	93	98	70-130	1	20	
Manganese	ug/L	1750	40	40	1770	1780	39	61	70-130	1	20 M1	
Zinc	ug/L	2810	100	100	2890	2860	82	52	70-130	1	20 M1	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132769

QC Batch: MPRP/20362

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60132769001

METHOD BLANK: 1094358

Matrix: Water

Associated Lab Samples: 60132769001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium, Dissolved	ug/L	ND	0.50	11/08/12 20:13	
Iron, Dissolved	ug/L	ND	50.0	11/08/12 20:13	
Manganese, Dissolved	ug/L	ND	1.0	11/08/12 20:13	
Zinc, Dissolved	ug/L	1.8J	10.0	11/08/12 20:13	

LABORATORY CONTROL SAMPLE: 1094359

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium, Dissolved	ug/L	40	41.2	103	85-115	
Iron, Dissolved	ug/L	1000	1020	102	85-115	
Manganese, Dissolved	ug/L	40	41.2	103	85-115	
Zinc, Dissolved	ug/L	100	107	107	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1094360

1094361

Parameter	Units	60132769001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium, Dissolved	ug/L	13.7	40	40	53.5	54.2	100	101	70-130	1	20	
Iron, Dissolved	ug/L	102J	1000	1000	1080	1110	98	100	70-130	2	20	
Manganese, Dissolved	ug/L	1760	40	40	1790	1770	89	31	70-130	1	20 M1	
Zinc, Dissolved	ug/L	2700	100	100	2770	2780	68	74	70-130	0	20 M1	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132769

QC Batch: WET/38114

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60132769001

METHOD BLANK: 1094453

Matrix: Water

Associated Lab Samples: 60132769001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	11/08/12 08:48	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	11/08/12 08:48	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	11/08/12 08:48	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	11/08/12 08:48	

LABORATORY CONTROL SAMPLE: 1094454

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	498	100	90-110	

SAMPLE DUPLICATE: 1094455

Parameter	Units	60132676001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	108	109	0	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	108	109	0	9	

SAMPLE DUPLICATE: 1094456

Parameter	Units	60132680004 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	161	161	0	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	161	161	0	9	

QUALIFIERS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132769

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132769

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60132769001	DR3A1211060600	EPA 200.7	MPRP/20359	EPA 200.7	ICP/16626
60132769001	DR3A1211060600	EPA 200.8	MPRP/20360	EPA 200.8	ICPM/1817
60132769001	DR3A1211060600	EPA 200.8	MPRP/20362	EPA 200.8	ICPM/1816
60132769001	DR3A1211060600	SM 2320B	WET/38114		

November 21, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60132846

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on November 07, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132846

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

Page 2 of 17

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SAMPLE SUMMARY

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132846

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60132846001	517INJECT121106	Water	11/06/12 10:30	11/07/12 10:20

REPORT OF LABORATORY ANALYSIS

Page 3 of 17

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SAMPLE ANALYTE COUNT

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132846

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60132846001	517INJECT121106	EPA 200.7	JGP	1
		EPA 200.8	SMW	4
		EPA 200.8	SMW	4
		SM 2320B	DJR	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132846

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: November 21, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132846

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 21, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20425

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60133063001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1097644)
 - Manganese
 - Zinc
- MSD (Lab ID: 1097645)
 - Manganese
 - Zinc

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132846

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 21, 2012

Analyte Comments:

QC Batch: MPRP/20425

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- 517INJECT121106 (Lab ID: 60132846001)
 - Cadmium
 - Iron
 - Manganese
 - Zinc

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60132846

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: November 21, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20439

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60133302002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1097973)
 - Zinc, Dissolved
- MSD (Lab ID: 1097974)
 - Zinc, Dissolved

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20439

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- 517INJECT121106 (Lab ID: 60132846001)
 - Cadmium, Dissolved
 - Iron, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132846

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: November 21, 2012

Analyte Comments:

QC Batch: MPRP/20439

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- 517INJECT121106 (Lab ID: 60132846001)

- Manganese, Dissolved

- Zinc, Dissolved

- MS (Lab ID: 1097973)

- Manganese, Dissolved

- MSD (Lab ID: 1097974)

- Cadmium, Dissolved

- Manganese, Dissolved

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60132846

Method: SM 2320B
Description: 2320B Alkalinity
Client: BP AMEC
Date: November 21, 2012

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

QC Batch: WET/38235

D6: The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.

- DUP (Lab ID: 1098293)
 - Alkalinity, Total as CaCO₃
 - Alkalinity, Bicarbonate (CaCO₃)

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132846

Sample: 517INJECT121106 Lab ID: 60132846001 Collected: 11/06/12 10:30 Received: 11/07/12 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Potassium	395000000	ug/L	500000	64100	1000	11/13/12 09:30	11/13/12 15:55	7440-09-7	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Cadmium	ND	ug/L	500	97.0	1000	11/13/12 09:30	11/13/12 16:11	7440-43-9	D3
Iron	ND	ug/L	50000	4600	1000	11/13/12 09:30	11/13/12 16:11	7439-89-6	D3
Manganese	ND	ug/L	1000	230	1000	11/13/12 09:30	11/13/12 16:11	7439-96-5	D3
Zinc	ND	ug/L	10000	1600	1000	11/13/12 09:30	11/13/12 16:11	7440-66-6	D3
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Cadmium, Dissolved	ND	ug/L	500	97.0	1000	11/13/12 17:15	11/14/12 15:55	7440-43-9	D3
Iron, Dissolved	ND	ug/L	50000	4600	1000	11/13/12 17:15	11/14/12 15:55	7439-89-6	D3
Manganese, Dissolved	232J	ug/L	1000	230	1000	11/13/12 17:15	11/14/12 15:55	7439-96-5	D3
Zinc, Dissolved	ND	ug/L	10000	1600	1000	11/13/12 17:15	11/14/12 15:55	7440-66-6	D3
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	ND	mg/L	6000	360	10		11/14/12 13:51		
Alkalinity, Carbonate (CaCO ₃)	233000	mg/L	6000	360	10		11/14/12 13:51		
Alkalinity, Hydroxide (CaCO ₃)	6620	mg/L	6000	360	10		11/14/12 13:51		
Alkalinity, Total as CaCO ₃	239000	mg/L	6000	360	10		11/14/12 13:51		

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132846

QC Batch: MPRP/20424

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60132846001

METHOD BLANK: 1097638

Matrix: Water

Associated Lab Samples: 60132846001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Potassium	ug/L	ND	500	11/13/12 15:12	

LABORATORY CONTROL SAMPLE: 1097639

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Potassium	ug/L	10000	10000	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1097640 1097641

Parameter	Units	60133063001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Potassium	ug/L	31700	10000	10000	40100	40800	83	91	70-130	2	7	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132846

QC Batch:	MPRP/20425	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET
Associated Lab Samples:	60132846001		

METHOD BLANK: 1097642 Matrix: Water

Associated Lab Samples: 60132846001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium	ug/L	ND	0.50	11/13/12 15:43	
Iron	ug/L	ND	50.0	11/13/12 15:43	
Manganese	ug/L	ND	1.0	11/13/12 15:43	
Zinc	ug/L	ND	10.0	11/13/12 15:43	

LABORATORY CONTROL SAMPLE: 1097643

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	40	39.7	99	85-115	
Iron	ug/L	1000	1000	100	85-115	
Manganese	ug/L	40	39.8	99	85-115	
Zinc	ug/L	100	107	107	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1097644 1097645

Parameter	Units	60133063001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium	ug/L	15.0	40	40	52.6	53.3	94	96	70-130	1	20	
Iron	ug/L	4340	1000	1000	5140	5150	80	81	70-130	0	20	
Manganese	ug/L	1630	40	40	1620	1620	-22	-30	70-130	0	20 M1	
Zinc	ug/L	2760	100	100	2790	2760	32	0	70-130	1	20 M1	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

QC Project No.: 60132846

QC Batch: MPRP/20439

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60132846001

METHOD BLANK: 1097971

Matrix: Water

Associated Lab Samples: 60132846001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium, Dissolved	ug/L	ND	0.50	11/14/12 15:39	
Iron, Dissolved	ug/L	ND	50.0	11/14/12 15:39	
Manganese, Dissolved	ug/L	ND	1.0	11/14/12 15:39	
Zinc, Dissolved	ug/L	ND	10.0	11/14/12 15:39	

LABORATORY CONTROL SAMPLE: 1097972

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium, Dissolved	ug/L	40	39.3	98	85-115	
Iron, Dissolved	ug/L	1000	976	98	85-115	
Manganese, Dissolved	ug/L	40	39.0	98	85-115	
Zinc, Dissolved	ug/L	100	103	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1097973

1097974

Parameter	Units	60133302002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium, Dissolved	ug/L	14.8	40	40	51.8	53.8	93	97	70-130	4	20	
Iron, Dissolved	ug/L	149J	1000	1000	1140	1140	99	99	70-130	0	20	
Manganese, Dissolved	ug/L	1820	40	40	1860	1860	94	90	70-130	0	20	
Zinc, Dissolved	ug/L	2920	100	100	3030	2960	110	42	70-130	2	20 M1	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60132846

QC Batch: WET/38235 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60132846001

METHOD BLANK: 1098290 Matrix: Water
Associated Lab Samples: 60132846001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	11/14/12 10:45	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	11/14/12 10:45	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	11/14/12 10:45	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	11/14/12 10:45	

LABORATORY CONTROL SAMPLE: 1098291

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	504	101	90-110	

SAMPLE DUPLICATE: 1098292

Parameter	Units	60132984001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	114	113	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	114	113	1	9	

SAMPLE DUPLICATE: 1098293

Parameter	Units	60133192001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	131	113	15	9 D6	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	131	113	15	9 D6	

QUALIFIERS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132846

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

D6 The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60132846

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60132846001	517INJECT121106	EPA 200.7	MPRP/20424	EPA 200.7	ICP/16668
60132846001	517INJECT121106	EPA 200.8	MPRP/20425	EPA 200.8	ICPM/1829
60132846001	517INJECT121106	EPA 200.8	MPRP/20439	EPA 200.8	ICPM/1834
60132846001	517INJECT121106	SM 2320B	WET/38235		

November 12, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: Rico-Argentine Mine Site
Pace Project No.: 60132935

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on November 08, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Rico-Argentine Mine Site

Pace Project No.: 60132935

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

SAMPLE SUMMARY

Project: Rico-Argentine Mine Site

Pace Project No.: 60132935

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60132935001	DR3A1211070600	Water	11/07/12 06:00	11/08/12 10:10

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Rico-Argentine Mine Site

Pace Project No.: 60132935

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60132935001	DR3A1211070600	EPA 200.7	JGP	1
		EPA 200.8	SMW	4
		EPA 200.8	SMW	4
		SM 2320B	DJR	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60132935

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: November 12, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60132935

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 12, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60132935

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: November 12, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60132935

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: November 12, 2012

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60132935

Sample: DR3A1211070600 Lab ID: 60132935001 Collected: 11/07/12 06:00 Received: 11/08/12 10:10 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Potassium	31700	ug/L	2500	320	5	11/08/12 16:00	11/09/12 11:57	7440-09-7	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Cadmium	14.3	ug/L	2.5	0.48	5	11/08/12 16:00	11/09/12 20:12	7440-43-9	
Iron	3780	ug/L	250	23.0	5	11/08/12 16:00	11/09/12 20:12	7439-89-6	
Manganese	1740	ug/L	10.0	2.3	10	11/08/12 16:00	11/12/12 15:28	7439-96-5	M6
Zinc	2900	ug/L	100	16.0	10	11/08/12 16:00	11/12/12 15:28	7440-66-6	M6
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Cadmium, Dissolved	13.7	ug/L	2.5	0.48	5	11/08/12 16:00	11/09/12 19:56	7440-43-9	
Iron, Dissolved	90.8J	ug/L	250	23.0	5	11/08/12 16:00	11/09/12 19:56	7439-89-6	
Manganese, Dissolved	1760	ug/L	10.0	2.3	10	11/08/12 16:00	11/12/12 15:12	7439-96-5	D9,M6
Zinc, Dissolved	2790	ug/L	100	16.0	10	11/08/12 16:00	11/12/12 15:12	7440-66-6	M6
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	104	mg/L	20.0	1.2	1		11/09/12 09:38		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		11/09/12 09:38		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		11/09/12 09:38		
Alkalinity, Total as CaCO3	104	mg/L	20.0	1.2	1		11/09/12 09:38		

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60132935

QC Batch: MPRP/20377

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60132935001

METHOD BLANK: 1095124

Matrix: Water

Associated Lab Samples: 60132935001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Potassium	ug/L	ND	500	11/09/12 11:53	

LABORATORY CONTROL SAMPLE: 1095125

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Potassium	ug/L	10000	9670	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1095126 1095127

Parameter	Units	60132935001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Potassium	ug/L	31700	10000	10000	42200	41600	105	100	70-130	1	7	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60132935

QC Batch:	MPRP/20380	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET
Associated Lab Samples:	60132935001		

METHOD BLANK: 1095156 Matrix: Water
Associated Lab Samples: 60132935001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium	ug/L	ND	0.50	11/09/12 19:47	
Iron	ug/L	ND	50.0	11/09/12 19:47	
Manganese	ug/L	ND	1.0	11/12/12 15:04	
Zinc	ug/L	ND	10.0	11/12/12 15:04	

LABORATORY CONTROL SAMPLE: 1095157

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	40	40.8	102	85-115	
Iron	ug/L	1000	951	95	85-115	
Manganese	ug/L	40	40.9	102	85-115	
Zinc	ug/L	100	108	108	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1095158 1095159

Parameter	Units	60132935001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium	ug/L	14.3	40	40	52.8	54.6	96	101	70-130	3	20	
Iron	ug/L	3780	1000	1000	4700	4740	92	96	70-130	1	20	
Manganese	ug/L	1740	40	40	1780	1820	98	198	70-130	2	20 M6	
Zinc	ug/L	2900	100	100	3020	3100	124	198	70-130	2	20 M6	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60132935

QC Batch:	MPRP/20381	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET Dissolved
Associated Lab Samples:	60132935001		

METHOD BLANK: 1095160 Matrix: Water
Associated Lab Samples: 60132935001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium, Dissolved	ug/L	ND	0.50	11/09/12 19:47	
Iron, Dissolved	ug/L	ND	50.0	11/09/12 19:47	
Manganese, Dissolved	ug/L	ND	1.0	11/12/12 15:04	
Zinc, Dissolved	ug/L	ND	10.0	11/12/12 15:04	

LABORATORY CONTROL SAMPLE: 1095161

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium, Dissolved	ug/L	40	40.8	102	85-115	
Iron, Dissolved	ug/L	1000	951	95	85-115	
Manganese, Dissolved	ug/L	40	40.9	102	85-115	
Zinc, Dissolved	ug/L	100	108	108	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1095162 1095163

Parameter	Units	60132935001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium, Dissolved	ug/L	13.7	40	40	53.2	52.6	99	97	70-130	1	20	
Iron, Dissolved	ug/L	90.8J	1000	1000	1030	1030	94	94	70-130	0	20	
Manganese, Dissolved	ug/L	1760	40	40	1770	1770	35	38	70-130	0	20 M6	
Zinc, Dissolved	ug/L	2790	100	100	2850	2830	63	40	70-130	1	20 M6	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60132935

QC Batch: WET/38146

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60132935001

METHOD BLANK: 1095751

Matrix: Water

Associated Lab Samples: 60132935001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	11/09/12 09:27	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	11/09/12 09:27	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	11/09/12 09:27	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	11/09/12 09:27	

LABORATORY CONTROL SAMPLE: 1095752

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	506	101	90-110	

SAMPLE DUPLICATE: 1095753

Parameter	Units	60132935001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	104	106	2	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	104	106	2	9	

SAMPLE DUPLICATE: 1095754

Parameter	Units	60132772009 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	170	170	0	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	170	170	0	9	

QUALIFIERS

Project: Rico-Argentine Mine Site

Pace Project No.: 60132935

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rico-Argentine Mine Site

Pace Project No.: 60132935

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60132935001	DR3A1211070600	EPA 200.7	MPRP/20377	EPA 200.7	ICP/16635
60132935001	DR3A1211070600	EPA 200.8	MPRP/20380	EPA 200.8	ICPM/1821
60132935001	DR3A1211070600	EPA 200.8	MPRP/20381	EPA 200.8	ICPM/1822
60132935001	DR3A1211070600	SM 2320B	WET/38146		

November 15, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60133063

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on November 09, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133063

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133063

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60133063001	DR3A1211080600	Water	11/08/12 06:00	11/09/12 10:20

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133063

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60133063001	DR3A1211080600	EPA 200.7	JGP	1
		EPA 200.8	SMW	4
		EPA 200.8	SMW	4
		SM 2320B	DJR	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133063

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: November 15, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133063

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 15, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20425

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60133063001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1097644)
 - Manganese
 - Zinc
- MSD (Lab ID: 1097645)
 - Manganese
 - Zinc

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60133063

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: November 15, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133063

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: November 15, 2012

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133063

Sample: DR3A1211080600 Lab ID: 60133063001 Collected: 11/08/12 06:00 Received: 11/09/12 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Potassium	31700	ug/L	2500	320	5	11/13/12 09:30	11/13/12 15:19	7440-09-7	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Cadmium	15.0	ug/L	2.5	0.48	5	11/13/12 09:30	11/13/12 15:51	7440-43-9	
Iron	4340	ug/L	250	23.0	5	11/13/12 09:30	11/13/12 15:51	7439-89-6	
Manganese	1630	ug/L	5.0	1.2	5	11/13/12 09:30	11/13/12 15:51	7439-96-5	M1
Zinc	2760	ug/L	50.0	8.0	5	11/13/12 09:30	11/13/12 15:51	7440-66-6	M1
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Cadmium, Dissolved	13.5	ug/L	2.5	0.48	5	11/13/12 17:15	11/14/12 15:47	7440-43-9	
Iron, Dissolved	190J	ug/L	250	23.0	5	11/13/12 17:15	11/14/12 15:47	7439-89-6	
Manganese, Dissolved	1740	ug/L	5.0	1.2	5	11/13/12 17:15	11/14/12 15:47	7439-96-5	D9
Zinc, Dissolved	2720	ug/L	50.0	8.0	5	11/13/12 17:15	11/14/12 15:47	7440-66-6	D9
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	107	mg/L	20.0	1.2	1		11/12/12 09:14		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		11/12/12 09:14		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		11/12/12 09:14		
Alkalinity, Total as CaCO ₃	107	mg/L	20.0	1.2	1		11/12/12 09:14		

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133063

QC Batch: MPRP/20424

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60133063001

METHOD BLANK: 1097638

Matrix: Water

Associated Lab Samples: 60133063001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Potassium	ug/L	ND	500	11/13/12 15:12	

LABORATORY CONTROL SAMPLE: 1097639

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Potassium	ug/L	10000	10000	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1097640 1097641

Parameter	Units	60133063001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Potassium	ug/L	31700	10000	10000	40100	40800	83	91	70-130	2	7	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133063

QC Batch:	MPRP/20425	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET
Associated Lab Samples:	60133063001		

METHOD BLANK: 1097642 Matrix: Water

Associated Lab Samples: 60133063001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium	ug/L	ND	0.50	11/13/12 15:43	
Iron	ug/L	ND	50.0	11/13/12 15:43	
Manganese	ug/L	ND	1.0	11/13/12 15:43	
Zinc	ug/L	ND	10.0	11/13/12 15:43	

LABORATORY CONTROL SAMPLE: 1097643

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	40	39.7	99	85-115	
Iron	ug/L	1000	1000	100	85-115	
Manganese	ug/L	40	39.8	99	85-115	
Zinc	ug/L	100	107	107	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1097644 1097645

Parameter	Units	60133063001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium	ug/L	15.0	40	40	52.6	53.3	94	96	70-130	1	20	
Iron	ug/L	4340	1000	1000	5140	5150	80	81	70-130	0	20	
Manganese	ug/L	1630	40	40	1620	1620	-22	-30	70-130	0	20 M1	
Zinc	ug/L	2760	100	100	2790	2760	32	0	70-130	1	20 M1	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133063

QC Batch: MPRP/20439

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60133063001

METHOD BLANK: 1097971

Matrix: Water

Associated Lab Samples: 60133063001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium, Dissolved	ug/L	ND	0.50	11/14/12 15:39	
Iron, Dissolved	ug/L	ND	50.0	11/14/12 15:39	
Manganese, Dissolved	ug/L	ND	1.0	11/14/12 15:39	
Zinc, Dissolved	ug/L	ND	10.0	11/14/12 15:39	

LABORATORY CONTROL SAMPLE: 1097972

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium, Dissolved	ug/L	40	39.3	98	85-115	
Iron, Dissolved	ug/L	1000	976	98	85-115	
Manganese, Dissolved	ug/L	40	39.0	98	85-115	
Zinc, Dissolved	ug/L	100	103	103	85-115	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133063

QC Batch: WET/38168

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60133063001

METHOD BLANK: 1097019

Matrix: Water

Associated Lab Samples: 60133063001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	11/12/12 09:03	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	11/12/12 09:03	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	11/12/12 09:03	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	11/12/12 09:03	

LABORATORY CONTROL SAMPLE: 1097020

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	493	99	90-110	

SAMPLE DUPLICATE: 1097021

Parameter	Units	60133063001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	107	106	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	107	106	1	9	

SAMPLE DUPLICATE: 1097022

Parameter	Units	60132922001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	291	298	2	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	291	298	2	9	

QUALIFIERS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133063

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133063

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60133063001	DR3A1211080600	EPA 200.7	MPRP/20424	EPA 200.7	ICP/16668
60133063001	DR3A1211080600	EPA 200.8	MPRP/20425	EPA 200.8	ICPM/1829
60133063001	DR3A1211080600	EPA 200.8	MPRP/20439	EPA 200.8	ICPM/1834
60133063001	DR3A1211080600	SM 2320B	WET/38168		

November 27, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: Rico-Argentine Mine Site
Pace Project No.: 60133152

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on November 09, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Rico-Argentine Mine Site

Pace Project No.: 60133152

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Rico-Argentine Mine Site

Pace Project No.: 60133152

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60133152001	517SHAFT465121107	Water	11/07/12 16:00	11/09/12 10:20

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Rico-Argentine Mine Site

Pace Project No.: 60133152

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60133152001	517SHAFT465121107	EPA 200.7	JGP	5
		EPA 200.7	JGP	6
		EPA 200.8	SMW	10
		EPA 200.8	SMW	10
		SM 2320B	DJR	4
		EPA 300.0	AJM	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60133152

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: November 27, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20457

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60133152001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1098545)
 - Sodium
- MSD (Lab ID: 1098546)
 - Potassium
 - Sodium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60133152

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: November 27, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20460

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- 517SHAFT465121107 (Lab ID: 60133152001)
 - Iron, Dissolved

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60133152

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 27, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20458

B: Analyte was detected in the associated method blank.

- 517SHAFT465121107 (Lab ID: 60133152001)
- Cobalt

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- 517SHAFT465121107 (Lab ID: 60133152001)
- Nickel
- Selenium

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60133152

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: November 27, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20439

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60133302002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1097973)
 - Zinc, Dissolved
- MSD (Lab ID: 1097974)
 - Zinc, Dissolved

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20439

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- 517SHAFT465121107 (Lab ID: 60133152001)
 - Cadmium, Dissolved
 - Chromium, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60133152

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: November 27, 2012

Analyte Comments:

QC Batch: MPRP/20439

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- 517SHAFT465121107 (Lab ID: 60133152001)

- Manganese, Dissolved
- Nickel, Dissolved
- Zinc, Dissolved
- Selenium, Dissolved

- MS (Lab ID: 1097973)

- Copper, Dissolved
- Lead, Dissolved
- Manganese, Dissolved

- MSD (Lab ID: 1097974)

- Cadmium, Dissolved
- Copper, Dissolved
- Lead, Dissolved
- Manganese, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60133152

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: November 27, 2012

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60133152

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: November 27, 2012

General Information:

1 sample was analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60133152

Sample: 517SHAFT465121107 Lab ID: 60133152001 Collected: 11/07/12 16:00 Received: 11/09/12 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	31600	ug/L	500	179	5	11/14/12 18:00	11/15/12 11:57	7440-70-2	
Iron	932	ug/L	250	86.0	5	11/14/12 18:00	11/15/12 11:57	7439-89-6	
Magnesium	9600	ug/L	250	86.0	5	11/14/12 18:00	11/15/12 11:57	7439-95-4	
Potassium	2440000	ug/L	25000	3200	50	11/14/12 18:00	11/15/12 12:06	7440-09-7	M1
Sodium	210000	ug/L	2500	200	5	11/14/12 18:00	11/15/12 11:57	7440-23-5	M1
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	2640	ug/L	500	179	5	11/14/12 12:00	11/15/12 11:43	7440-70-2	
Iron, Dissolved	ND	ug/L	250	86.0	5	11/14/12 12:00	11/15/12 11:43	7439-89-6	D3
Lithium, Dissolved	71.8	ug/L	50.0	18.3	5	11/14/12 12:00	11/15/12 11:43	7439-93-2	
Magnesium, Dissolved	8240	ug/L	250	86.0	5	11/14/12 12:00	11/15/12 11:43	7439-95-4	
Potassium, Dissolved	2470000	ug/L	25000	3200	50	11/14/12 12:00	11/15/12 11:35	7440-09-7	D9
Sodium, Dissolved	211000	ug/L	2500	200	5	11/14/12 12:00	11/15/12 11:43	7440-23-5	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	3.0J	ug/L	10.0	1.4	10	11/14/12 18:00	11/16/12 15:21	7440-38-2	
Cadmium	3.0J	ug/L	5.0	0.97	10	11/14/12 18:00	11/16/12 15:21	7440-43-9	
Chromium	5.9J	ug/L	10.0	1.1	10	11/14/12 18:00	11/16/12 15:21	7440-47-3	
Cobalt	2.1J	ug/L	10.0	0.48	10	11/14/12 18:00	11/16/12 15:21	7440-48-4	B
Copper	61.0	ug/L	10.0	4.5	10	11/14/12 18:00	11/16/12 15:21	7440-50-8	
Lead	196	ug/L	10.0	0.51	10	11/14/12 18:00	11/16/12 15:21	7439-92-1	
Manganese	232	ug/L	10.0	2.3	10	11/14/12 18:00	11/16/12 15:21	7439-96-5	
Nickel	ND	ug/L	10.0	3.5	10	11/14/12 18:00	11/16/12 15:21	7440-02-0	D3
Selenium	ND	ug/L	10.0	3.5	10	11/14/12 18:00	11/16/12 15:21	7782-49-2	D3
Zinc	708	ug/L	100	16.0	10	11/14/12 18:00	11/16/12 15:21	7440-66-6	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	1.1J	ug/L	5.0	0.70	5	11/13/12 17:15	11/14/12 16:11	7440-38-2	
Cadmium, Dissolved	ND	ug/L	2.5	0.48	5	11/13/12 17:15	11/14/12 16:11	7440-43-9	D3,M1
Chromium, Dissolved	ND	ug/L	10.0	1.1	10	11/13/12 17:15	11/15/12 14:44	7440-47-3	D3
Cobalt, Dissolved	1.2J	ug/L	10.0	0.48	10	11/13/12 17:15	11/15/12 14:44	7440-48-4	
Copper, Dissolved	40.1	ug/L	10.0	4.5	10	11/13/12 17:15	11/15/12 14:44	7440-50-8	M1
Lead, Dissolved	17.7	ug/L	5.0	0.26	5	11/13/12 17:15	11/14/12 16:11	7439-92-1	M1
Manganese, Dissolved	ND	ug/L	10.0	2.3	10	11/13/12 17:15	11/15/12 14:44	7439-96-5	D3,M1
Nickel, Dissolved	ND	ug/L	10.0	3.5	10	11/13/12 17:15	11/15/12 14:44	7440-02-0	D3
Selenium, Dissolved	ND	ug/L	10.0	3.5	10	11/13/12 17:15	11/15/12 14:44	7782-49-2	D3
Zinc, Dissolved	ND	ug/L	100	16.0	10	11/13/12 17:15	11/15/12 14:44	7440-66-6	D3,M1
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	ND	mg/L	100	6.0	5		11/15/12 12:36		
Alkalinity, Carbonate (CaCO3)	2930	mg/L	100	6.0	5		11/15/12 12:36		
Alkalinity, Hydroxide (CaCO3)	150	mg/L	100	6.0	5		11/15/12 12:36		
Alkalinity, Total as CaCO3	3080	mg/L	100	6.0	5		11/15/12 12:36		

ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60133152

Sample: 517SHAFT465121107		Lab ID: 60133152001		Collected: 11/07/12 16:00		Received: 11/09/12 10:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.95J	mg/L	1.0	0.078	1		11/15/12 23:15	24959-67-9	
Chloride	4.7	mg/L	1.0	0.50	1		11/15/12 23:15	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		11/15/12 23:15	16984-48-8	
Sulfate	623	mg/L	50.0	6.0	50		11/15/12 23:33	14808-79-8	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60133152

QC Batch: MPRP/20457

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60133152001

METHOD BLANK: 1098543

Matrix: Water

Associated Lab Samples: 60133152001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	ug/L	ND	100	11/15/12 11:53	
Iron	ug/L	ND	50.0	11/15/12 11:53	
Magnesium	ug/L	ND	50.0	11/15/12 11:53	
Potassium	ug/L	84.8J	500	11/15/12 11:53	
Sodium	ug/L	ND	500	11/15/12 11:53	

LABORATORY CONTROL SAMPLE: 1098544

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	9820	98	85-115	
Iron	ug/L	10000	9850	99	85-115	
Magnesium	ug/L	10000	9860	99	85-115	
Potassium	ug/L	10000	9710	97	85-115	
Sodium	ug/L	10000	9840	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1098545 1098546

Parameter	Units	60133152001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	31600	10000	10000	40900	40700	93	92	70-130	0	9	
Iron	ug/L	932	10000	10000	10900	10800	100	99	70-130	1	10	
Magnesium	ug/L	9600	10000	10000	19000	18800	94	92	70-130	1	9	
Potassium	ug/L	2440000	10000	10000	2450000	2440000	125	0	70-130	1	7 M1	
Sodium	ug/L	210000	10000	10000	214000	213000	44	30	70-130	1	8 M1	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60133152

QC Batch:	MPRP/20460	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Dissolved
Associated Lab Samples:	60133152001		

METHOD BLANK: 1098562 Matrix: Water
Associated Lab Samples: 60133152001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	11/15/12 12:22	
Iron, Dissolved	ug/L	ND	50.0	11/15/12 12:22	
Lithium, Dissolved	ug/L	ND	10.0	11/15/12 12:22	
Magnesium, Dissolved	ug/L	ND	50.0	11/15/12 12:22	
Potassium, Dissolved	ug/L	111J	500	11/15/12 12:22	
Sodium, Dissolved	ug/L	ND	500	11/15/12 12:22	

LABORATORY CONTROL SAMPLE: 1098563

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9920	99	85-115	
Iron, Dissolved	ug/L	10000	10100	101	85-115	
Lithium, Dissolved	ug/L	1000	972	97	85-115	
Magnesium, Dissolved	ug/L	10000	9940	99	85-115	
Potassium, Dissolved	ug/L	10000	9700	97	85-115	
Sodium, Dissolved	ug/L	10000	9830	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1098564 1098565

Parameter	Units	60133303001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium, Dissolved	ug/L	245000	10000	10000	257000	254000	116	93	70-130	1	9	
Iron, Dissolved	ug/L	116	10000	10000	10100	10000	100	99	70-130	1	10	
Lithium, Dissolved	ug/L	39.8	1000	1000	1070	1080	103	104	70-130	1	20	
Magnesium, Dissolved	ug/L	20300	10000	10000	30000	29900	98	96	70-130	0	9	
Potassium, Dissolved	ug/L	22900	10000	10000	33600	33600	108	108	70-130	0	7	
Sodium, Dissolved	ug/L	12100	10000	10000	22700	22800	106	107	70-130	0	8	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60133152

QC Batch: MPRP/20458 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60133152001

METHOD BLANK: 1098549 Matrix: Water
Associated Lab Samples: 60133152001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	11/16/12 13:12	
Cadmium	ug/L	ND	0.50	11/16/12 13:12	
Chromium	ug/L	ND	1.0	11/16/12 13:12	
Cobalt	ug/L	0.16J	1.0	11/16/12 13:12	
Copper	ug/L	ND	1.0	11/16/12 13:12	
Lead	ug/L	0.16J	1.0	11/16/12 13:12	
Manganese	ug/L	ND	1.0	11/16/12 13:12	
Nickel	ug/L	ND	1.0	11/16/12 13:12	
Selenium	ug/L	ND	1.0	11/16/12 13:12	
Zinc	ug/L	2.9J	10.0	11/16/12 13:12	

LABORATORY CONTROL SAMPLE: 1098550

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	41.3	103	85-115	
Cadmium	ug/L	40	41.1	103	85-115	
Chromium	ug/L	40	41.7	104	85-115	
Cobalt	ug/L	40	40.9	102	85-115	
Copper	ug/L	40	41.0	103	85-115	
Lead	ug/L	40	40.5	101	85-115	
Manganese	ug/L	40	41.3	103	85-115	
Nickel	ug/L	40	41.6	104	85-115	
Selenium	ug/L	40	41.7	104	85-115	
Zinc	ug/L	100	112	112	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1098551 1098552

Parameter	Units	60133411001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	0.92J	40	40	41.1	41.8	101	102	70-130	2	20	
Cadmium	ug/L	15.5	40	40	55.4	55.6	100	100	70-130	0	20	
Chromium	ug/L	0.42J	40	40	40.4	41.4	100	102	70-130	2	20	
Cobalt	ug/L	3.0	40	40	41.4	41.9	96	97	70-130	1	20	
Copper	ug/L	69.2	40	40	106	106	92	92	70-130	0	20	
Lead	ug/L	5.7	40	40	46.2	46.5	101	102	70-130	1	20	
Manganese	ug/L	1830	40	40	1870	1860	104	77	70-130	1	20	
Nickel	ug/L	4.5	40	40	43.1	42.7	97	96	70-130	1	20	
Selenium	ug/L	ND	40	40	39.8	40.2	99	100	70-130	1	20	
Zinc	ug/L	2930	100	100	3040	3040	114	112	70-130	0	20	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60133152

QC Batch: MPRP/20439 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60133152001

METHOD BLANK: 1097971 Matrix: Water
Associated Lab Samples: 60133152001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	11/14/12 15:39	
Cadmium, Dissolved	ug/L	ND	0.50	11/14/12 15:39	
Chromium, Dissolved	ug/L	ND	1.0	11/14/12 15:39	
Cobalt, Dissolved	ug/L	ND	1.0	11/14/12 15:39	
Copper, Dissolved	ug/L	ND	1.0	11/14/12 15:39	
Lead, Dissolved	ug/L	0.23J	1.0	11/14/12 15:39	
Manganese, Dissolved	ug/L	ND	1.0	11/14/12 15:39	
Nickel, Dissolved	ug/L	ND	1.0	11/14/12 15:39	
Selenium, Dissolved	ug/L	ND	1.0	11/14/12 15:39	
Zinc, Dissolved	ug/L	ND	10.0	11/14/12 15:39	

LABORATORY CONTROL SAMPLE: 1097972

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	38.6	96	85-115	
Cadmium, Dissolved	ug/L	40	39.3	98	85-115	
Chromium, Dissolved	ug/L	40	39.1	98	85-115	
Cobalt, Dissolved	ug/L	40	38.4	96	85-115	
Copper, Dissolved	ug/L	40	38.9	97	85-115	
Lead, Dissolved	ug/L	40	38.3	96	85-115	
Manganese, Dissolved	ug/L	40	39.0	98	85-115	
Nickel, Dissolved	ug/L	40	38.1	95	85-115	
Selenium, Dissolved	ug/L	40	40.3	101	85-115	
Zinc, Dissolved	ug/L	100	103	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1097973 1097974

Parameter	Units	60133302002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	ND	40	40	38.2	38.0	96	95	70-130	1	20	
Cadmium, Dissolved	ug/L	14.8	40	40	51.8	53.8	93	97	70-130	4	20	
Chromium, Dissolved	ug/L	ND	40	40	39.1	39.2	97	97	70-130	0	20	
Cobalt, Dissolved	ug/L	2.8J	40	40	40.8	41.3	95	96	70-130	1	20	
Copper, Dissolved	ug/L	3.8J	40	40	41.3	40.6	94	92	70-130	2	20	
Lead, Dissolved	ug/L	1.1J	40	40	40.3	40.3	98	98	70-130	0	20	
Manganese, Dissolved	ug/L	1820	40	40	1860	1860	94	90	70-130	0	20	
Nickel, Dissolved	ug/L	4.2J	40	40	41.3	42.7	93	96	70-130	3	20	
Selenium, Dissolved	ug/L	ND	40	40	40.4	41.1	101	102	70-130	2	20	
Zinc, Dissolved	ug/L	2920	100	100	3030	2960	110	42	70-130	2	20 M1	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60133152

QC Batch: WET/38267

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60133152001

METHOD BLANK: 1099070

Matrix: Water

Associated Lab Samples: 60133152001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	11/15/12 10:03	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	11/15/12 10:03	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	11/15/12 10:03	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	11/15/12 10:03	

LABORATORY CONTROL SAMPLE: 1099071

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	495	99	90-110	

SAMPLE DUPLICATE: 1099072

Parameter	Units	60133411001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	105	107	2	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	105	107	2	9	

SAMPLE DUPLICATE: 1099073

Parameter	Units	60132931004 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	ND	7.5J		9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	7.5J		9	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60133152

QC Batch:	WETA/22486	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
Associated Lab Samples:	60133152001		

METHOD BLANK: 1099221 Matrix: Water
Associated Lab Samples: 60133152001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	11/15/12 12:50	
Chloride	mg/L	ND	1.0	11/15/12 12:50	
Fluoride	mg/L	ND	0.20	11/15/12 12:50	
Sulfate	mg/L	ND	1.0	11/15/12 12:50	

LABORATORY CONTROL SAMPLE: 1099222

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.9	97	90-110	
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	2.5	2.4	96	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE SAMPLE: 1099223

Parameter	Units	60133272001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	100	96.1	96	75-119	
Chloride	mg/L	236	100	326	90	64-118	
Fluoride	mg/L	ND	50	48.0	96	75-110	
Sulfate	mg/L	78.5	100	181	102	61-119	

MATRIX SPIKE SAMPLE: 1099224

Parameter	Units	60132755001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	5	5.2	104	75-119	
Chloride	mg/L	2.2	5	6.8	91	64-118	
Fluoride	mg/L	ND	2.5	2.6	103	75-110	
Sulfate	mg/L	2.2	5	7.2	100	61-119	

QUALIFIERS

Project: Rico-Argentine Mine Site

Pace Project No.: 60133152

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rico-Argentine Mine Site

Pace Project No.: 60133152

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60133152001	517SHAFT465121107	EPA 200.7	MPRP/20457	EPA 200.7	ICP/16685
60133152001	517SHAFT465121107	EPA 200.7	MPRP/20460	EPA 200.7	ICP/16682
60133152001	517SHAFT465121107	EPA 200.8	MPRP/20458	EPA 200.8	ICPM/1842
60133152001	517SHAFT465121107	EPA 200.8	MPRP/20439	EPA 200.8	ICPM/1834
60133152001	517SHAFT465121107	SM 2320B	WET/38267		
60133152001	517SHAFT465121107	EPA 300.0	WETA/22486		

November 15, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: Rico-Argentine Mine Site
Pace Project No.: 60133201

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on November 10, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Rico-Argentine Mine Site

Pace Project No.: 60133201

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Rico-Argentine Mine Site

Pace Project No.: 60133201

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60133201001	DR3A1211090600	Water	11/09/12 06:00	11/10/12 09:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Rico-Argentine Mine Site

Pace Project No.: 60133201

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60133201001	DR3A1211090600	EPA 200.7	JGP	1
		EPA 200.8	SMW	4
		EPA 200.8	SMW	4
		SM 2320B	DJR	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60133201

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: November 15, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60133201

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 15, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20425

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60133063001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1097644)
 - Manganese
 - Zinc
- MSD (Lab ID: 1097645)
 - Manganese
 - Zinc

Additional Comments:

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60133201

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: November 15, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60133201

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: November 15, 2012

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60133201

Sample: DR3A1211090600		Lab ID: 60133201001		Collected: 11/09/12 06:00		Received: 11/10/12 09:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Potassium	58900	ug/L	2500	320	5	11/13/12 09:30	11/13/12 15:32	7440-09-7	
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Cadmium	15.5	ug/L	2.5	0.48	5	11/13/12 09:30	11/13/12 16:07	7440-43-9	
Iron	4610	ug/L	250	23.0	5	11/13/12 09:30	11/13/12 16:07	7439-89-6	
Manganese	1700	ug/L	5.0	1.2	5	11/13/12 09:30	11/13/12 16:07	7439-96-5	
Zinc	2860	ug/L	50.0	8.0	5	11/13/12 09:30	11/13/12 16:07	7440-66-6	
200.8 MET ICPMS, Dissolved		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Cadmium, Dissolved	13.8	ug/L	2.5	0.48	5	11/13/12 17:15	11/14/12 15:51	7440-43-9	
Iron, Dissolved	88.8J	ug/L	250	23.0	5	11/13/12 17:15	11/14/12 15:51	7439-89-6	
Manganese, Dissolved	1760	ug/L	5.0	1.2	5	11/13/12 17:15	11/14/12 15:51	7439-96-5	D9
Zinc, Dissolved	2740	ug/L	50.0	8.0	5	11/13/12 17:15	11/14/12 15:51	7440-66-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	107	mg/L	20.0	1.2	1		11/12/12 09:22		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		11/12/12 09:22		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		11/12/12 09:22		
Alkalinity, Total as CaCO ₃	107	mg/L	20.0	1.2	1		11/12/12 09:22		

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60133201

QC Batch: MPRP/20424

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60133201001

METHOD BLANK: 1097638

Matrix: Water

Associated Lab Samples: 60133201001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Potassium	ug/L	ND	500	11/13/12 15:12	

LABORATORY CONTROL SAMPLE: 1097639

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Potassium	ug/L	10000	10000	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1097640 1097641

Parameter	Units	60133063001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Potassium	ug/L	31700	10000	10000	40100	40800	83	91	70-130	2	7	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60133201

QC Batch:	MPRP/20425	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET
Associated Lab Samples:	60133201001		

METHOD BLANK: 1097642 Matrix: Water
Associated Lab Samples: 60133201001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium	ug/L	ND	0.50	11/13/12 15:43	
Iron	ug/L	ND	50.0	11/13/12 15:43	
Manganese	ug/L	ND	1.0	11/13/12 15:43	
Zinc	ug/L	ND	10.0	11/13/12 15:43	

LABORATORY CONTROL SAMPLE: 1097643

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	40	39.7	99	85-115	
Iron	ug/L	1000	1000	100	85-115	
Manganese	ug/L	40	39.8	99	85-115	
Zinc	ug/L	100	107	107	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1097644 1097645

Parameter	Units	60133063001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium	ug/L	15.0	40	40	52.6	53.3	94	96	70-130	1	20	
Iron	ug/L	4340	1000	1000	5140	5150	80	81	70-130	0	20	
Manganese	ug/L	1630	40	40	1620	1620	-22	-30	70-130	0	20 M1	
Zinc	ug/L	2760	100	100	2790	2760	32	0	70-130	1	20 M1	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60133201

QC Batch: MPRP/20439

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60133201001

METHOD BLANK: 1097971

Matrix: Water

Associated Lab Samples: 60133201001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium, Dissolved	ug/L	ND	0.50	11/14/12 15:39	
Iron, Dissolved	ug/L	ND	50.0	11/14/12 15:39	
Manganese, Dissolved	ug/L	ND	1.0	11/14/12 15:39	
Zinc, Dissolved	ug/L	ND	10.0	11/14/12 15:39	

LABORATORY CONTROL SAMPLE: 1097972

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium, Dissolved	ug/L	40	39.3	98	85-115	
Iron, Dissolved	ug/L	1000	976	98	85-115	
Manganese, Dissolved	ug/L	40	39.0	98	85-115	
Zinc, Dissolved	ug/L	100	103	103	85-115	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60133201

QC Batch: WET/38168

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60133201001

METHOD BLANK: 1097019

Matrix: Water

Associated Lab Samples: 60133201001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	11/12/12 09:03	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	11/12/12 09:03	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	11/12/12 09:03	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	11/12/12 09:03	

LABORATORY CONTROL SAMPLE: 1097020

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	493	99	90-110	

SAMPLE DUPLICATE: 1097021

Parameter	Units	60133063001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	107	106	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	107	106	1	9	

SAMPLE DUPLICATE: 1097022

Parameter	Units	60132922001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	291	298	2	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	291	298	2	9	

QUALIFIERS

Project: Rico-Argentine Mine Site

Pace Project No.: 60133201

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rico-Argentine Mine Site

Pace Project No.: 60133201

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60133201001	DR3A1211090600	EPA 200.7	MPRP/20424	EPA 200.7	ICP/16668
60133201001	DR3A1211090600	EPA 200.8	MPRP/20425	EPA 200.8	ICPM/1829
60133201001	DR3A1211090600	EPA 200.8	MPRP/20439	EPA 200.8	ICPM/1834
60133201001	DR3A1211090600	SM 2320B	WET/38168		

November 21, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60133302

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on November 13, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133302

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

Page 2 of 17

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SAMPLE SUMMARY

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133302

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60133302001	DR3A1211100600	Water	11/10/12 06:00	11/13/12 10:00
60133302002	DR3A1211120000	Water	11/12/12 00:00	11/13/12 10:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133302

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60133302001	DR3A1211100600	EPA 200.7	JGP	1
		EPA 200.8	SMW	4
		EPA 200.8	SMW	4
		SM 2320B	DJR	4
60133302002	DR3A1211120000	EPA 200.7	JGP	1
		EPA 200.8	SMW	4
		EPA 200.8	SMW	4
		SM 2320B	DJR	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133302

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: November 21, 2012

General Information:

2 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133302

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 21, 2012

General Information:

2 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20438

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60133302002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1097969)
- Manganese

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133302

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: November 21, 2012

General Information:

2 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20439

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60133302002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1097973)
 - Manganese, Dissolved
 - Zinc, Dissolved
- MSD (Lab ID: 1097974)
 - Cadmium, Dissolved
 - Manganese, Dissolved
 - Zinc, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

Page 7 of 17

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133302

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: November 21, 2012

Analyte Comments:

QC Batch: MPRP/20439

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1211100600 (Lab ID: 60133302001)
- Iron, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60133302

Method: SM 2320B
Description: 2320B Alkalinity
Client: BP AMEC
Date: November 21, 2012

General Information:

2 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

QC Batch: WET/38235

D6: The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.

- DUP (Lab ID: 1098293)
 - Alkalinity, Total as CaCO₃
 - Alkalinity, Bicarbonate (CaCO₃)

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133302

Sample: DR3A1211100600		Lab ID: 60133302001		Collected: 11/10/12 06:00		Received: 11/13/12 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Potassium	46100	ug/L	2500	320	5	11/13/12 17:20	11/14/12 11:44	7440-09-7	
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Cadmium	16.8	ug/L	2.5	0.48	5	11/13/12 17:15	11/15/12 14:20	7440-43-9	
Iron	5700	ug/L	250	23.0	5	11/13/12 17:15	11/15/12 14:20	7439-89-6	
Manganese	1900	ug/L	5.0	1.2	5	11/13/12 17:15	11/15/12 14:20	7439-96-5	
Zinc	3210	ug/L	50.0	8.0	5	11/13/12 17:15	11/15/12 14:20	7440-66-6	
200.8 MET ICPMS, Dissolved		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Cadmium, Dissolved	15.3	ug/L	2.5	0.48	5	11/13/12 17:15	11/14/12 15:59	7440-43-9	
Iron, Dissolved	ND	ug/L	250	23.0	5	11/13/12 17:15	11/14/12 15:59	7439-89-6	D3
Manganese, Dissolved	1910	ug/L	5.0	1.2	5	11/13/12 17:15	11/14/12 15:59	7439-96-5	D9
Zinc, Dissolved	3050	ug/L	50.0	8.0	5	11/13/12 17:15	11/14/12 15:59	7440-66-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	108	mg/L	20.0	1.2	1		11/14/12 11:05		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		11/14/12 11:05		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		11/14/12 11:05		
Alkalinity, Total as CaCO ₃	108	mg/L	20.0	1.2	1		11/14/12 11:05		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133302

Sample: DR3A1211120000 Lab ID: 60133302002 Collected: 11/12/12 00:00 Received: 11/13/12 10:00 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Potassium	43400	ug/L	2500	320	5	11/13/12 17:20	11/14/12 11:52	7440-09-7	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Cadmium	15.7	ug/L	2.5	0.48	5	11/13/12 17:15	11/15/12 14:24	7440-43-9	
Iron	5150	ug/L	250	23.0	5	11/13/12 17:15	11/15/12 14:24	7439-89-6	
Manganese	1820	ug/L	5.0	1.2	5	11/13/12 17:15	11/15/12 14:24	7439-96-5	M1
Zinc	3040	ug/L	50.0	8.0	5	11/13/12 17:15	11/15/12 14:24	7440-66-6	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Cadmium, Dissolved	14.8	ug/L	2.5	0.48	5	11/13/12 17:15	11/14/12 16:03	7440-43-9	
Iron, Dissolved	149J	ug/L	250	23.0	5	11/13/12 17:15	11/14/12 16:03	7439-89-6	
Manganese, Dissolved	1820	ug/L	5.0	1.2	5	11/13/12 17:15	11/14/12 16:03	7439-96-5	
Zinc, Dissolved	2920	ug/L	50.0	8.0	5	11/13/12 17:15	11/14/12 16:03	7440-66-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	106	mg/L	20.0	1.2	1		11/14/12 11:09		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		11/14/12 11:09		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		11/14/12 11:09		
Alkalinity, Total as CaCO ₃	106	mg/L	20.0	1.2	1		11/14/12 11:09		

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133302

QC Batch: MPRP/20437

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60133302001, 60133302002

METHOD BLANK: 1097962

Matrix: Water

Associated Lab Samples: 60133302001, 60133302002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Potassium	ug/L	ND	500	11/14/12 11:39	

LABORATORY CONTROL SAMPLE: 1097963

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Potassium	ug/L	10000	9580	96	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1097964 1097965

Parameter	Units	60133302001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Potassium	ug/L	46100	10000	10000	54600	54200	85	80	70-130	1	7	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133302

QC Batch:	MPRP/20438	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET
Associated Lab Samples: 60133302001, 60133302002			

METHOD BLANK: 1097967 Matrix: Water

Associated Lab Samples: 60133302001, 60133302002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium	ug/L	ND	0.50	11/15/12 14:12	
Iron	ug/L	9.1J	50.0	11/15/12 14:12	
Manganese	ug/L	ND	1.0	11/15/12 14:12	
Zinc	ug/L	ND	10.0	11/15/12 14:12	

LABORATORY CONTROL SAMPLE: 1097968

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	40	41.1	103	85-115	
Iron	ug/L	1000	1010	101	85-115	
Manganese	ug/L	40	40.2	100	85-115	
Zinc	ug/L	100	106	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1097969 1097970

Parameter	Units	60133302002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium	ug/L	15.7	40	40	56.6	56.8	102	103	70-130	0	20	
Iron	ug/L	5150	1000	1000	6120	6210	98	106	70-130	1	20	
Manganese	ug/L	1820	40	40	1880	1870	148	125	70-130	0	20	M1
Zinc	ug/L	3040	100	100	3150	3150	109	109	70-130	0	20	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133302

QC Batch: MPRP/20439

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60133302001, 60133302002

METHOD BLANK: 1097971

Matrix: Water

Associated Lab Samples: 60133302001, 60133302002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium, Dissolved	ug/L	ND	0.50	11/14/12 15:39	
Iron, Dissolved	ug/L	ND	50.0	11/14/12 15:39	
Manganese, Dissolved	ug/L	ND	1.0	11/14/12 15:39	
Zinc, Dissolved	ug/L	ND	10.0	11/14/12 15:39	

LABORATORY CONTROL SAMPLE: 1097972

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium, Dissolved	ug/L	40	39.3	98	85-115	
Iron, Dissolved	ug/L	1000	976	98	85-115	
Manganese, Dissolved	ug/L	40	39.0	98	85-115	
Zinc, Dissolved	ug/L	100	103	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1097973

1097974

Parameter	Units	60133302002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium, Dissolved	ug/L	14.8	40	40	51.8	53.8	93	97	70-130	4	20	M1
Iron, Dissolved	ug/L	149J	1000	1000	1140	1140	99	99	70-130	0	20	
Manganese, Dissolved	ug/L	1820	40	40	1860	1860	94	90	70-130	0	20	M1
Zinc, Dissolved	ug/L	2920	100	100	3030	2960	110	42	70-130	2	20	M1

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133302

QC Batch: WET/38235

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60133302001, 60133302002

METHOD BLANK: 1098290

Matrix: Water

Associated Lab Samples: 60133302001, 60133302002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	11/14/12 10:45	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	11/14/12 10:45	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	11/14/12 10:45	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	11/14/12 10:45	

LABORATORY CONTROL SAMPLE: 1098291

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	504	101	90-110	

SAMPLE DUPLICATE: 1098292

Parameter	Units	60132984001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	114	113	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	114	113	1	9	

SAMPLE DUPLICATE: 1098293

Parameter	Units	60133192001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	131	113	15	9	D6
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	131	113	15	9	D6

QUALIFIERS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133302

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

D6 The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133302

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60133302001	DR3A1211100600	EPA 200.7	MPRP/20437	EPA 200.7	ICP/16676
60133302002	DR3A1211120000	EPA 200.7	MPRP/20437	EPA 200.7	ICP/16676
60133302001	DR3A1211100600	EPA 200.8	MPRP/20438	EPA 200.8	ICPM/1833
60133302002	DR3A1211120000	EPA 200.8	MPRP/20438	EPA 200.8	ICPM/1833
60133302001	DR3A1211100600	EPA 200.8	MPRP/20439	EPA 200.8	ICPM/1834
60133302002	DR3A1211120000	EPA 200.8	MPRP/20439	EPA 200.8	ICPM/1834
60133302001	DR3A1211100600	SM 2320B	WET/38235		
60133302002	DR3A1211120000	SM 2320B	WET/38235		

November 21, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60133303

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on November 13, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133303

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

SAMPLE SUMMARY

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133303

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60133303001	DR3A1211110600	Water	11/11/12 06:00	11/13/12 10:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133303

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60133303001	DR3A1211110600	EPA 200.7	JGP	5
		EPA 200.7	JGP	6
		EPA 200.8	SMW	10
		EPA 200.8	SMW	10
		SM 2320B	DJR	4
		EPA 300.0	AJM	4

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133303

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: November 21, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133303

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: November 21, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133303

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 21, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20438

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60133302002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1097969)
- Manganese

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20438

B: Analyte was detected in the associated method blank.

- DR3A1211110600 (Lab ID: 60133303001)
- Cobalt
- Lead

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133303

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 21, 2012

Analyte Comments:

QC Batch: MPRP/20438

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1211110600 (Lab ID: 60133303001)

- Arsenic
- Selenium

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133303

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: November 21, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20439

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60133302002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1097973)
 - Zinc, Dissolved
- MSD (Lab ID: 1097974)
 - Zinc, Dissolved

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20439

B: Analyte was detected in the associated method blank.

- DR3A1211110600 (Lab ID: 60133303001)
 - Lead, Dissolved

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133303

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: November 21, 2012

Analyte Comments:

QC Batch: MPRP/20439

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1211110600 (Lab ID: 60133303001)

- Arsenic, Dissolved
- Chromium, Dissolved
- Selenium, Dissolved

- MS (Lab ID: 1097973)

- Copper, Dissolved
- Lead, Dissolved
- Manganese, Dissolved

- MSD (Lab ID: 1097974)

- Cadmium, Dissolved
- Copper, Dissolved
- Lead, Dissolved
- Manganese, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133303

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: November 21, 2012

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

QC Batch: WET/38235

D6: The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.

- DUP (Lab ID: 1098293)
 - Alkalinity, Total as CaCO₃
 - Alkalinity, Bicarbonate (CaCO₃)

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133303

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: November 21, 2012

General Information:

1 sample was analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: WETA/22444

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60132950026, 60132950028

D6: The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.

- MSD (Lab ID: 1097671)
- Sulfate

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133303

Sample: DR3A1211110600		Lab ID: 60133303001		Collected: 11/11/12 06:00		Received: 11/13/12 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	239000	ug/L	500	179	5	11/13/12 17:20	11/14/12 11:54	7440-70-2	
Iron	5900	ug/L	250	86.0	5	11/13/12 17:20	11/14/12 11:54	7439-89-6	
Magnesium	19600	ug/L	250	86.0	5	11/13/12 17:20	11/14/12 11:54	7439-95-4	
Potassium	42300	ug/L	2500	320	5	11/13/12 17:20	11/14/12 11:54	7440-09-7	
Sodium	11100	ug/L	2500	200	5	11/13/12 17:20	11/14/12 11:54	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	245000	ug/L	100	35.8	1	11/14/12 12:00	11/15/12 11:27	7440-70-2	D9
Iron, Dissolved	116	ug/L	50.0	17.2	1	11/14/12 12:00	11/15/12 11:27	7439-89-6	
Lithium, Dissolved	39.8	ug/L	10.0	3.7	1	11/14/12 12:00	11/15/12 11:27	7439-93-2	
Magnesium, Dissolved	20300	ug/L	50.0	17.2	1	11/14/12 12:00	11/15/12 11:27	7439-95-4	D9
Potassium, Dissolved	22900	ug/L	500	64.1	1	11/14/12 12:00	11/15/12 11:27	7440-09-7	
Sodium, Dissolved	12100	ug/L	500	40.1	1	11/14/12 12:00	11/15/12 11:27	7440-23-5	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	ND	ug/L	5.0	0.70	5	11/13/12 17:15	11/15/12 14:40	7440-38-2	D3
Cadmium	16.4	ug/L	2.5	0.48	5	11/13/12 17:15	11/15/12 14:40	7440-43-9	
Chromium	0.98J	ug/L	5.0	0.55	5	11/13/12 17:15	11/15/12 14:40	7440-47-3	
Cobalt	3.3J	ug/L	5.0	0.24	5	11/13/12 17:15	11/15/12 14:40	7440-48-4	B
Copper	59.7	ug/L	5.0	2.2	5	11/13/12 17:15	11/15/12 14:40	7440-50-8	
Lead	4.9J	ug/L	5.0	0.26	5	11/13/12 17:15	11/15/12 14:40	7439-92-1	B
Manganese	1880	ug/L	5.0	1.2	5	11/13/12 17:15	11/15/12 14:40	7439-96-5	
Nickel	4.5J	ug/L	5.0	1.8	5	11/13/12 17:15	11/15/12 14:40	7440-02-0	
Selenium	ND	ug/L	5.0	1.8	5	11/13/12 17:15	11/15/12 14:40	7782-49-2	D3
Zinc	3190	ug/L	50.0	8.0	5	11/13/12 17:15	11/15/12 14:40	7440-66-6	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	5.0	0.70	5	11/13/12 17:15	11/14/12 16:07	7440-38-2	D3
Cadmium, Dissolved	14.8	ug/L	2.5	0.48	5	11/13/12 17:15	11/14/12 16:07	7440-43-9	
Chromium, Dissolved	ND	ug/L	5.0	0.55	5	11/13/12 17:15	11/14/12 16:07	7440-47-3	D3
Cobalt, Dissolved	2.9J	ug/L	5.0	0.24	5	11/13/12 17:15	11/14/12 16:07	7440-48-4	
Copper, Dissolved	3.0J	ug/L	5.0	2.2	5	11/13/12 17:15	11/14/12 16:07	7440-50-8	
Lead, Dissolved	1.1J	ug/L	5.0	0.26	5	11/13/12 17:15	11/14/12 16:07	7439-92-1	B
Manganese, Dissolved	1890	ug/L	5.0	1.2	5	11/13/12 17:15	11/14/12 16:07	7439-96-5	D9
Nickel, Dissolved	4.1J	ug/L	5.0	1.8	5	11/13/12 17:15	11/14/12 16:07	7440-02-0	
Selenium, Dissolved	ND	ug/L	5.0	1.8	5	11/13/12 17:15	11/14/12 16:07	7782-49-2	D3
Zinc, Dissolved	3050	ug/L	50.0	8.0	5	11/13/12 17:15	11/14/12 16:07	7440-66-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	109	mg/L	20.0	1.2	1		11/14/12 11:13		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		11/14/12 11:13		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		11/14/12 11:13		
Alkalinity, Total as CaCO ₃	109	mg/L	20.0	1.2	1		11/14/12 11:13		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133303

Sample: DR3A1211110600		Lab ID: 60133303001		Collected: 11/11/12 06:00		Received: 11/13/12 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	1.1	mg/L	1.0	0.078	1		11/13/12 23:51	24959-67-9	
Chloride	5.1	mg/L	1.0	0.50	1		11/13/12 23:51	16887-00-6	
Fluoride	2.3	mg/L	0.20	0.011	1		11/13/12 23:51	16984-48-8	
Sulfate	662	mg/L	50.0	6.0	50		11/14/12 00:09	14808-79-8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133303

QC Batch: MPRP/20437

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60133303001

METHOD BLANK: 1097962

Matrix: Water

Associated Lab Samples: 60133303001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	ug/L	ND	100	11/14/12 11:39	
Iron	ug/L	ND	50.0	11/14/12 11:39	
Magnesium	ug/L	ND	50.0	11/14/12 11:39	
Potassium	ug/L	ND	500	11/14/12 11:39	
Sodium	ug/L	ND	500	11/14/12 11:39	

LABORATORY CONTROL SAMPLE: 1097963

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	9820	98	85-115	
Iron	ug/L	10000	9950	100	85-115	
Magnesium	ug/L	10000	9910	99	85-115	
Potassium	ug/L	10000	9580	96	85-115	
Sodium	ug/L	10000	9730	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1097964

1097965

Parameter	Units	60133302001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	251000	10000	10000	262000	259000	114	85	70-130	1	9	
Iron	ug/L	5890	10000	10000	16000	16000	101	101	70-130	0	10	
Magnesium	ug/L	20600	10000	10000	30800	30300	102	97	70-130	1	9	
Potassium	ug/L	46100	10000	10000	54600	54200	85	80	70-130	1	7	
Sodium	ug/L	11500	10000	10000	21200	21100	98	96	70-130	1	8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133303

QC Batch: MPRP/20460

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60133303001

METHOD BLANK: 1098562

Matrix: Water

Associated Lab Samples: 60133303001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	11/15/12 12:22	
Iron, Dissolved	ug/L	ND	50.0	11/15/12 12:22	
Lithium, Dissolved	ug/L	ND	10.0	11/15/12 12:22	
Magnesium, Dissolved	ug/L	ND	50.0	11/15/12 12:22	
Potassium, Dissolved	ug/L	111J	500	11/15/12 12:22	
Sodium, Dissolved	ug/L	ND	500	11/15/12 12:22	

LABORATORY CONTROL SAMPLE: 1098563

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9920	99	85-115	
Iron, Dissolved	ug/L	10000	10100	101	85-115	
Lithium, Dissolved	ug/L	1000	972	97	85-115	
Magnesium, Dissolved	ug/L	10000	9940	99	85-115	
Potassium, Dissolved	ug/L	10000	9700	97	85-115	
Sodium, Dissolved	ug/L	10000	9830	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1098564

1098565

Parameter	Units	60133303001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium, Dissolved	ug/L	245000	10000	10000	257000	254000	116	93	70-130	1	9	
Iron, Dissolved	ug/L	116	10000	10000	10100	10000	100	99	70-130	1	10	
Lithium, Dissolved	ug/L	39.8	1000	1000	1070	1080	103	104	70-130	1	20	
Magnesium, Dissolved	ug/L	20300	10000	10000	30000	29900	98	96	70-130	0	9	
Potassium, Dissolved	ug/L	22900	10000	10000	33600	33600	108	108	70-130	0	7	
Sodium, Dissolved	ug/L	12100	10000	10000	22700	22800	106	107	70-130	0	8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133303

QC Batch: MPRP/20438

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET

Associated Lab Samples: 60133303001

METHOD BLANK: 1097967

Matrix: Water

Associated Lab Samples: 60133303001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	11/15/12 14:12	
Cadmium	ug/L	ND	0.50	11/15/12 14:12	
Chromium	ug/L	ND	1.0	11/15/12 14:12	
Cobalt	ug/L	0.11J	1.0	11/15/12 14:12	
Copper	ug/L	ND	1.0	11/15/12 14:12	
Lead	ug/L	0.20J	1.0	11/15/12 14:12	
Manganese	ug/L	ND	1.0	11/15/12 14:12	
Nickel	ug/L	ND	1.0	11/15/12 14:12	
Selenium	ug/L	ND	1.0	11/15/12 14:12	
Zinc	ug/L	ND	10.0	11/15/12 14:12	

LABORATORY CONTROL SAMPLE: 1097968

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	39.6	99	85-115	
Cadmium	ug/L	40	41.1	103	85-115	
Chromium	ug/L	40	40.4	101	85-115	
Cobalt	ug/L	40	39.1	98	85-115	
Copper	ug/L	40	38.9	97	85-115	
Lead	ug/L	40	39.9	100	85-115	
Manganese	ug/L	40	40.2	100	85-115	
Nickel	ug/L	40	39.2	98	85-115	
Selenium	ug/L	40	40.7	102	85-115	
Zinc	ug/L	100	106	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1097969 1097970

Parameter	Units	60133302002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	ND	40	40	39.8	39.8	100	100	70-130	0	20	
Cadmium	ug/L	15.7	40	40	56.6	56.8	102	103	70-130	0	20	
Chromium	ug/L	0.87J	40	40	39.6	40.6	97	99	70-130	2	20	
Cobalt	ug/L	3.1J	40	40	40.5	40.7	94	94	70-130	1	20	
Copper	ug/L	63.4	40	40	100	99.4	92	90	70-130	1	20	
Lead	ug/L	5.3	40	40	44.6	45.1	98	100	70-130	1	20	
Manganese	ug/L	1820	40	40	1880	1870	148	125	70-130	0	20 M1	
Nickel	ug/L	4.4J	40	40	40.0	42.5	89	95	70-130	6	20	
Selenium	ug/L	ND	40	40	39.3	39.7	98	99	70-130	1	20	
Zinc	ug/L	3040	100	100	3150	3150	109	109	70-130	0	20	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133303

QC Batch: MPRP/20439

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60133303001

METHOD BLANK: 1097971

Matrix: Water

Associated Lab Samples: 60133303001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	11/14/12 15:39	
Cadmium, Dissolved	ug/L	ND	0.50	11/14/12 15:39	
Chromium, Dissolved	ug/L	ND	1.0	11/14/12 15:39	
Cobalt, Dissolved	ug/L	ND	1.0	11/14/12 15:39	
Copper, Dissolved	ug/L	ND	1.0	11/14/12 15:39	
Lead, Dissolved	ug/L	0.23J	1.0	11/14/12 15:39	
Manganese, Dissolved	ug/L	ND	1.0	11/14/12 15:39	
Nickel, Dissolved	ug/L	ND	1.0	11/14/12 15:39	
Selenium, Dissolved	ug/L	ND	1.0	11/14/12 15:39	
Zinc, Dissolved	ug/L	ND	10.0	11/14/12 15:39	

LABORATORY CONTROL SAMPLE: 1097972

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	38.6	96	85-115	
Cadmium, Dissolved	ug/L	40	39.3	98	85-115	
Chromium, Dissolved	ug/L	40	39.1	98	85-115	
Cobalt, Dissolved	ug/L	40	38.4	96	85-115	
Copper, Dissolved	ug/L	40	38.9	97	85-115	
Lead, Dissolved	ug/L	40	38.3	96	85-115	
Manganese, Dissolved	ug/L	40	39.0	98	85-115	
Nickel, Dissolved	ug/L	40	38.1	95	85-115	
Selenium, Dissolved	ug/L	40	40.3	101	85-115	
Zinc, Dissolved	ug/L	100	103	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1097973

1097974

Parameter	Units	60133302002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	ND	40	40	38.2	38.0	96	95	70-130	1	20	
Cadmium, Dissolved	ug/L	14.8	40	40	51.8	53.8	93	97	70-130	4	20	
Chromium, Dissolved	ug/L	ND	40	40	39.1	39.2	97	97	70-130	0	20	
Cobalt, Dissolved	ug/L	2.8J	40	40	40.8	41.3	95	96	70-130	1	20	
Copper, Dissolved	ug/L	3.8J	40	40	41.3	40.6	94	92	70-130	2	20	
Lead, Dissolved	ug/L	1.1J	40	40	40.3	40.3	98	98	70-130	0	20	
Manganese, Dissolved	ug/L	1820	40	40	1860	1860	94	90	70-130	0	20	
Nickel, Dissolved	ug/L	4.2J	40	40	41.3	42.7	93	96	70-130	3	20	
Selenium, Dissolved	ug/L	ND	40	40	40.4	41.1	101	102	70-130	2	20	
Zinc, Dissolved	ug/L	2920	100	100	3030	2960	110	42	70-130	2	20 M1	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133303

QC Batch: WET/38235

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60133303001

METHOD BLANK: 1098290

Matrix: Water

Associated Lab Samples: 60133303001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	11/14/12 10:45	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	11/14/12 10:45	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	11/14/12 10:45	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	11/14/12 10:45	

LABORATORY CONTROL SAMPLE: 1098291

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	504	101	90-110	

SAMPLE DUPLICATE: 1098292

Parameter	Units	60132984001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	114	113	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	114	113	1	9	

SAMPLE DUPLICATE: 1098293

Parameter	Units	60133192001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	131	113	15	9	D6
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	131	113	15	9	D6

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60133303

QC Batch: WETA/22444 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60133303001

METHOD BLANK: 1097667 Matrix: Water
Associated Lab Samples: 60133303001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	11/13/12 15:29	
Chloride	mg/L	ND	1.0	11/13/12 15:29	
Fluoride	mg/L	ND	0.20	11/13/12 15:29	
Sulfate	mg/L	ND	1.0	11/13/12 15:29	

LABORATORY CONTROL SAMPLE: 1097668

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.9	98	90-110	
Chloride	mg/L	5	4.9	97	90-110	
Fluoride	mg/L	2.5	2.4	97	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE SAMPLE: 1097669

Parameter	Units	60132950026 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	5000	4750	95	75-119	
Chloride	mg/L	10300	5000	14700	88	64-118	
Fluoride	mg/L	ND	2500	2340	94	75-110	
Sulfate	mg/L	ND	5000	5430	109	61-119	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1097670 1097671

Parameter	Units	60132950028 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	ND	5000	5000	4810	4830	96	97	75-119	0	10	
Chloride	mg/L	12000	5000	5000	16700	16600	95	93	64-118	1	12	
Fluoride	mg/L	ND	2500	2500	2420	2410	97	96	75-110	0	10	
Sulfate	mg/L	ND	5000	5000	6700	5290	128	100	61-119	23	10 D6,M6	

QUALIFIERS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133303

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

- | | |
|----|---|
| B | Analyte was detected in the associated method blank. |
| D3 | Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference. |
| D6 | The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits. |
| D9 | Dissolved result is greater than the total. Data is within laboratory control limits. |
| M1 | Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery. |
| M6 | Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution. |

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133303

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60133303001	DR3A1211110600	EPA 200.7	MPRP/20437	EPA 200.7	ICP/16676
60133303001	DR3A1211110600	EPA 200.7	MPRP/20460	EPA 200.7	ICP/16682
60133303001	DR3A1211110600	EPA 200.8	MPRP/20438	EPA 200.8	ICPM/1833
60133303001	DR3A1211110600	EPA 200.8	MPRP/20439	EPA 200.8	ICPM/1834
60133303001	DR3A1211110600	SM 2320B	WET/38235		
60133303001	DR3A1211110600	EPA 300.0	WETA/22444		

November 16, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: Rico-Argentine Mine Site
Pace Project No.: 60133411

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on November 14, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Rico-Argentine Mine Site

Pace Project No.: 60133411

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Rico-Argentine Mine Site

Pace Project No.: 60133411

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60133411001	DR3A1211130600	Water	11/13/12 06:00	11/14/12 10:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Rico-Argentine Mine Site

Pace Project No.: 60133411

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60133411001	DR3A1211130600	EPA 200.7	JGP	1
		EPA 200.8	SMW	4
		EPA 200.8	SMW	4
		SM 2320B	DJR	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60133411

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: November 16, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20457

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60133152001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1098546)
- Potassium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60133411

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 16, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60133411

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: November 16, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20459

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60133411001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1098557)
- Manganese, Dissolved

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20459

B: Analyte was detected in the associated method blank.

- DR3A1211130600 (Lab ID: 60133411001)
- Iron, Dissolved

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- DR3A1211130600 (Lab ID: 60133411001)
- Chromium, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60133411

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: November 16, 2012

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60133411

Sample: DR3A1211130600		Lab ID: 60133411001		Collected: 11/13/12 06:00		Received: 11/14/12 10:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Potassium	25700	ug/L	5000	641	10	11/14/12 18:00	11/15/12 12:19	7440-09-7	
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Chromium	0.42J	ug/L	2.0	0.22	2	11/14/12 18:00	11/16/12 13:40	7440-47-3	
Iron	5100	ug/L	100	9.2	2	11/14/12 18:00	11/16/12 13:40	7439-89-6	
Manganese	1830	ug/L	2.0	0.46	2	11/14/12 18:00	11/16/12 13:40	7439-96-5	
Zinc	2930	ug/L	20.0	3.2	2	11/14/12 18:00	11/16/12 13:40	7440-66-6	
200.8 MET ICPMS, Dissolved		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Chromium, Dissolved	ND	ug/L	2.0	0.22	2	11/14/12 18:00	11/16/12 13:20	7440-47-3	D3
Iron, Dissolved	70.6J	ug/L	100	9.2	2	11/14/12 18:00	11/16/12 13:20	7439-89-6	B
Manganese, Dissolved	1820	ug/L	2.0	0.46	2	11/14/12 18:00	11/16/12 13:20	7439-96-5	M1
Zinc, Dissolved	2790	ug/L	20.0	3.2	2	11/14/12 18:00	11/16/12 13:20	7440-66-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	105	mg/L	20.0	1.2	1		11/15/12 10:14		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		11/15/12 10:14		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		11/15/12 10:14		
Alkalinity, Total as CaCO ₃	105	mg/L	20.0	1.2	1		11/15/12 10:14		

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60133411

QC Batch: MPRP/20457

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60133411001

METHOD BLANK: 1098543

Matrix: Water

Associated Lab Samples: 60133411001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Potassium	ug/L	84.8J	500	11/15/12 11:53	

LABORATORY CONTROL SAMPLE: 1098544

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Potassium	ug/L	10000	9710	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1098545

1098546

Parameter	Units	60133152001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Potassium	ug/L	2440000	10000	10000	2450000	2440000	125	0	70-130	1	7 M1	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60133411

QC Batch:	MPRP/20458	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET
Associated Lab Samples:	60133411001		

METHOD BLANK: 1098549 Matrix: Water
Associated Lab Samples: 60133411001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium	ug/L	ND	1.0	11/16/12 13:12	
Iron	ug/L	9.6J	50.0	11/16/12 13:12	
Manganese	ug/L	ND	1.0	11/16/12 13:12	
Zinc	ug/L	2.9J	10.0	11/16/12 13:12	

LABORATORY CONTROL SAMPLE: 1098550

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium	ug/L	40	41.7	104	85-115	
Iron	ug/L	1000	1040	104	85-115	
Manganese	ug/L	40	41.3	103	85-115	
Zinc	ug/L	100	112	112	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1098551 1098552

Parameter	Units	60133411001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium	ug/L	0.42J	40	40	40.4	41.4	100	102	70-130	2	20	
Iron	ug/L	5100	1000	1000	6110	6110	101	101	70-130	0	20	
Manganese	ug/L	1830	40	40	1870	1860	104	77	70-130	1	20	
Zinc	ug/L	2930	100	100	3040	3040	114	112	70-130	0	20	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60133411

QC Batch:	MPRP/20459	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET Dissolved
Associated Lab Samples:	60133411001		

METHOD BLANK: 1098555 Matrix: Water
Associated Lab Samples: 60133411001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Dissolved	ug/L	ND	1.0	11/16/12 13:12	
Iron, Dissolved	ug/L	9.6J	50.0	11/16/12 13:12	
Manganese, Dissolved	ug/L	ND	1.0	11/16/12 13:12	
Zinc, Dissolved	ug/L	2.9J	10.0	11/16/12 13:12	

LABORATORY CONTROL SAMPLE: 1098556

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Dissolved	ug/L	40	41.7	104	85-115	
Iron, Dissolved	ug/L	1000	1040	104	85-115	
Manganese, Dissolved	ug/L	40	41.3	103	85-115	
Zinc, Dissolved	ug/L	100	112	112	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1098557 1098558

Parameter	Units	60133411001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Dissolved	ug/L	ND	40	40	40.1	41.4	100	103	70-130	3	20	
Iron, Dissolved	ug/L	70.6J	1000	1000	1070	1090	100	102	70-130	2	20	
Manganese, Dissolved	ug/L	1820	40	40	1880	1850	156	86	70-130	2	20	M1
Zinc, Dissolved	ug/L	2790	100	100	2890	2860	100	70	70-130	1	20	

QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60133411

QC Batch: WET/38267 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60133411001

METHOD BLANK: 1099070 Matrix: Water
Associated Lab Samples: 60133411001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	11/15/12 10:03	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	11/15/12 10:03	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	11/15/12 10:03	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	11/15/12 10:03	

LABORATORY CONTROL SAMPLE: 1099071

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	495	99	90-110	

SAMPLE DUPLICATE: 1099072

Parameter	Units	60133411001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	105	107	2	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	105	107	2	9	

SAMPLE DUPLICATE: 1099073

Parameter	Units	60132931004 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	ND	7.5J		9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	7.5J		9	

QUALIFIERS

Project: Rico-Argentine Mine Site

Pace Project No.: 60133411

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rico-Argentine Mine Site

Pace Project No.: 60133411

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60133411001	DR3A1211130600	EPA 200.7	MPRP/20457	EPA 200.7	ICP/16685
60133411001	DR3A1211130600	EPA 200.8	MPRP/20458	EPA 200.8	ICPM/1842
60133411001	DR3A1211130600	EPA 200.8	MPRP/20459	EPA 200.8	ICPM/1841
60133411001	DR3A1211130600	SM 2320B	WET/38267		

November 20, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60133505

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on November 15, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133505

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133505

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60133505001	DR3A1211140600	Water	11/14/12 06:00	11/15/12 10:15

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133505

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60133505001	DR3A1211140600	EPA 200.7	JGP	1
		EPA 200.8	JGP	4
		EPA 200.8	JGP	4
		SM 2320B	DJR	4

REPORT OF LABORATORY ANALYSIS

Page 4 of 15

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133505

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: November 20, 2012

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133505

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 20, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20522

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60133505001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1100637)
- Zinc

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133505

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: November 20, 2012

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20521

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60133505001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1100632)
- Manganese, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133505

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: November 20, 2012

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133505

Sample: DR3A1211140600 Lab ID: 60133505001 Collected: 11/14/12 06:00 Received: 11/15/12 10:15 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Potassium	25300	ug/L	500	64.1	1	11/16/12 17:45	11/19/12 15:12	7440-09-7	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Chromium	0.38J	ug/L	1.0	0.11	1	11/16/12 17:30	11/19/12 18:08	7440-47-3	
Iron	5390	ug/L	50.0	4.6	1	11/16/12 17:30	11/19/12 18:08	7439-89-6	
Manganese	1810	ug/L	1.0	0.23	1	11/16/12 17:30	11/19/12 18:08	7439-96-5	
Zinc	2690	ug/L	10.0	1.6	1	11/16/12 17:30	11/19/12 18:08	7440-66-6	M1
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Chromium, Dissolved	0.19J	ug/L	1.0	0.11	1	11/16/12 17:30	11/19/12 18:53	7440-47-3	
Iron, Dissolved	142	ug/L	50.0	4.6	1	11/16/12 17:30	11/19/12 18:53	7439-89-6	
Manganese, Dissolved	1790	ug/L	1.0	0.23	1	11/16/12 17:30	11/19/12 18:53	7439-96-5	M1
Zinc, Dissolved	2470	ug/L	10.0	1.6	1	11/16/12 17:30	11/19/12 18:53	7440-66-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	107	mg/L	20.0	1.2	1		11/19/12 09:07		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		11/19/12 09:07		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		11/19/12 09:07		
Alkalinity, Total as CaCO ₃	107	mg/L	20.0	1.2	1		11/19/12 09:07		

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133505

QC Batch: MPRP/20519

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60133505001

METHOD BLANK: 1100607

Matrix: Water

Associated Lab Samples: 60133505001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Potassium	ug/L	ND	500	11/19/12 15:08	

LABORATORY CONTROL SAMPLE: 1100608

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Potassium	ug/L	10000	9700	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1100609 1100610

Parameter	Units	60133505001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Potassium	ug/L	25300	10000	10000	35500	35200	102	100	70-130	1	7	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133505

QC Batch:	MPRP/20522	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET
Associated Lab Samples:	60133505001		

METHOD BLANK: 1100634 Matrix: Water

Associated Lab Samples: 60133505001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium	ug/L	ND	1.0	11/19/12 18:00	
Iron	ug/L	ND	50.0	11/19/12 18:00	
Manganese	ug/L	ND	1.0	11/19/12 18:00	
Zinc	ug/L	ND	10.0	11/19/12 18:00	

LABORATORY CONTROL SAMPLE: 1100635

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium	ug/L	40	40.1	100	85-115	
Iron	ug/L	1000	1000	100	85-115	
Manganese	ug/L	40	39.7	99	85-115	
Zinc	ug/L	100	107	107	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1100636 1100637

Parameter	Units	60133505001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium	ug/L	0.38J	40	40	39.0	39.2	97	97	70-130	0	20	
Iron	ug/L	5390	1000	1000	6360	6280	97	90	70-130	1	20	
Manganese	ug/L	1810	40	40	1850	1840	90	70	70-130	0	20	
Zinc	ug/L	2690	100	100	2770	2830	84	143	70-130	2	20 M1	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133505

QC Batch: MPRP/20521

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60133505001

METHOD BLANK: 1100630

Matrix: Water

Associated Lab Samples: 60133505001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Dissolved	ug/L	ND	1.0	11/19/12 18:45	
Iron, Dissolved	ug/L	ND	50.0	11/19/12 18:45	
Manganese, Dissolved	ug/L	ND	1.0	11/19/12 18:45	
Zinc, Dissolved	ug/L	ND	10.0	11/19/12 18:45	

LABORATORY CONTROL SAMPLE: 1100631

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Dissolved	ug/L	40	40.4	101	85-115	
Iron, Dissolved	ug/L	1000	1010	101	85-115	
Manganese, Dissolved	ug/L	40	40.5	101	85-115	
Zinc, Dissolved	ug/L	100	108	108	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1100632

1100633

Parameter	Units	60133505001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Dissolved	ug/L	0.19J	40	40	38.5	37.9	96	94	70-130	2	20	
Iron, Dissolved	ug/L	142	1000	1000	1120	1100	97	96	70-130	2	20	
Manganese, Dissolved	ug/L	1790	40	40	1840	1840	132	122	70-130	0	20 M1	
Zinc, Dissolved	ug/L	2470	100	100	2570	2560	103	93	70-130	0	20	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133505

QC Batch: WET/38321

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60133505001

METHOD BLANK: 1101354

Matrix: Water

Associated Lab Samples: 60133505001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	11/19/12 08:56	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	11/19/12 08:56	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	11/19/12 08:56	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	11/19/12 08:56	

LABORATORY CONTROL SAMPLE: 1101355

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	478	96	90-110	

SAMPLE DUPLICATE: 1101356

Parameter	Units	60133505001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	107	108	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	107	108	1	9	

SAMPLE DUPLICATE: 1101357

Parameter	Units	60133038001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	27.8	27.4	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	27.8	27.4	1	9	

QUALIFIERS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133505

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133505

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60133505001	DR3A1211140600	EPA 200.7	MPRP/20519	EPA 200.7	ICP/16715
60133505001	DR3A1211140600	EPA 200.8	MPRP/20522	EPA 200.8	ICPM/1855
60133505001	DR3A1211140600	EPA 200.8	MPRP/20521	EPA 200.8	ICPM/1851
60133505001	DR3A1211140600	SM 2320B	WET/38321		

November 21, 2012

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60133622

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on November 16, 2012. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133622

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133622

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60133622001	517SHAFT465121114	Water	11/14/12 13:35	11/16/12 10:00
60133622002	BLAINEOBF121114	Water	11/14/12 15:05	11/16/12 10:00
60133622003	BLAINEIBF121114	Water	11/14/12 15:10	11/16/12 10:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133622

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60133622001	517SHAFT465121114	EPA 200.7	JGP	5
		EPA 200.7	JGP	6
		EPA 200.8	JGP	10
		EPA 200.8	JGP	10
		SM 2320B	DJR	4
		EPA 300.0	AJM	4
60133622002	BLAINEOBF121114	EPA 200.7	JGP	5
		EPA 200.7	JGP	6
		EPA 200.8	JGP	10
		EPA 200.8	JGP	10
		SM 2320B	DJR	4
		EPA 300.0	AJM	4
60133622003	BLAINEIBF121114	EPA 200.7	JGP	5
		EPA 200.7	JGP	6
		EPA 200.8	JGP	10
		EPA 200.8	JGP	10
		SM 2320B	DJR	4
		EPA 300.0	AJM	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60133622

Method: EPA 200.7
Description: 200.7 Metals, Total
Client: BP AMEC
Date: November 21, 2012

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20519

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60133505001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1100609)
- Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60133622

Method: EPA 200.7
Description: 200.7 Metals, Dissolved
Client: BP AMEC
Date: November 21, 2012

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20524

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60133622001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1100645)
 - Calcium, Dissolved
 - Potassium, Dissolved
- MSD (Lab ID: 1100646)
 - Potassium, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133622

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: November 21, 2012

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20522

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60133505001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1100637)
- Zinc

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20522

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- BLAINEIBF121114 (Lab ID: 60133622003)
- Selenium

REPORT OF LABORATORY ANALYSIS

PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133622

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: November 21, 2012

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/20521

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60133505001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1100632)
- Manganese, Dissolved

Additional Comments:

Analyte Comments:

QC Batch: MPRP/20521

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- BLAINEIBF121114 (Lab ID: 60133622003)
- Selenium, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133622

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: November 21, 2012

General Information:

3 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO ARGENTINE MINE SITE
Pace Project No.: 60133622

Method: EPA 300.0
Description: 300.0 IC Anions 28 Days
Client: BP AMEC
Date: November 21, 2012

General Information:

3 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133622

Sample: 517SHAFT46512114 Lab ID: 60133622001 Collected: 11/14/12 13:35 Received: 11/16/12 10:00 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	185000	ug/L	100	35.8	1	11/16/12 17:45	11/19/12 15:21	7440-70-2	
Iron	460	ug/L	50.0	17.2	1	11/16/12 17:45	11/19/12 15:21	7439-89-6	
Magnesium	24000	ug/L	50.0	17.2	1	11/16/12 17:45	11/19/12 15:21	7439-95-4	
Potassium	308000	ug/L	500	64.1	1	11/16/12 17:45	11/19/12 15:21	7440-09-7	
Sodium	22700	ug/L	500	40.1	1	11/16/12 17:45	11/19/12 15:21	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	195000	ug/L	100	35.8	1	11/16/12 17:45	11/20/12 10:43	7440-70-2	D9,M1
Iron, Dissolved	ND	ug/L	50.0	17.2	1	11/16/12 17:45	11/20/12 10:43	7439-89-6	
Lithium, Dissolved	58.1	ug/L	10.0	3.7	1	11/16/12 17:45	11/20/12 15:25	7439-93-2	
Magnesium, Dissolved	24000	ug/L	50.0	17.2	1	11/16/12 17:45	11/20/12 10:43	7439-95-4	
Potassium, Dissolved	296000	ug/L	500	64.1	1	11/16/12 17:45	11/20/12 10:43	7440-09-7	M1
Sodium, Dissolved	21700	ug/L	500	40.1	1	11/16/12 17:45	11/20/12 10:43	7440-23-5	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.31J	ug/L	1.0	0.14	1	11/16/12 17:30	11/19/12 18:24	7440-38-2	
Cadmium	17.9	ug/L	0.50	0.097	1	11/16/12 17:30	11/19/12 18:24	7440-43-9	
Chromium	0.62J	ug/L	1.0	0.11	1	11/16/12 17:30	11/19/12 18:24	7440-47-3	
Cobalt	2.3	ug/L	1.0	0.048	1	11/16/12 17:30	11/19/12 18:24	7440-48-4	
Copper	30.0	ug/L	1.0	0.45	1	11/16/12 17:30	11/19/12 18:24	7440-50-8	
Lead	8.6	ug/L	1.0	0.051	1	11/16/12 17:30	11/19/12 18:24	7439-92-1	
Manganese	2170	ug/L	1.0	0.23	1	11/16/12 17:30	11/19/12 18:24	7439-96-5	
Nickel	2.7	ug/L	1.0	0.35	1	11/16/12 17:30	11/19/12 18:24	7440-02-0	
Selenium	ND	ug/L	1.0	0.35	1	11/16/12 17:30	11/19/12 18:24	7782-49-2	
Zinc	3210	ug/L	10.0	1.6	1	11/16/12 17:30	11/19/12 18:24	7440-66-6	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.24J	ug/L	1.0	0.14	1	11/16/12 17:30	11/19/12 19:10	7440-38-2	
Cadmium, Dissolved	17.0	ug/L	0.50	0.097	1	11/16/12 17:30	11/19/12 19:10	7440-43-9	
Chromium, Dissolved	0.40J	ug/L	1.0	0.11	1	11/16/12 17:30	11/19/12 19:10	7440-47-3	
Cobalt, Dissolved	2.2	ug/L	1.0	0.048	1	11/16/12 17:30	11/19/12 19:10	7440-48-4	
Copper, Dissolved	16.9	ug/L	1.0	0.45	1	11/16/12 17:30	11/19/12 19:10	7440-50-8	
Lead, Dissolved	0.37J	ug/L	1.0	0.051	1	11/16/12 17:30	11/19/12 19:10	7439-92-1	
Manganese, Dissolved	2160	ug/L	1.0	0.23	1	11/16/12 17:30	11/19/12 19:10	7439-96-5	
Nickel, Dissolved	2.7	ug/L	1.0	0.35	1	11/16/12 17:30	11/19/12 19:10	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.35	1	11/16/12 17:30	11/19/12 19:10	7782-49-2	
Zinc, Dissolved	2940	ug/L	10.0	1.6	1	11/16/12 17:30	11/19/12 19:10	7440-66-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	211	mg/L	20.0	1.2	1		11/19/12 09:15		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		11/19/12 09:15		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		11/19/12 09:15		
Alkalinity, Total as CaCO3	211	mg/L	20.0	1.2	1		11/19/12 09:15		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133622

Sample: 517SHAFT465121114		Lab ID: 60133622001		Collected: 11/14/12 13:35		Received: 11/16/12 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.28J	mg/L	1.0	0.078	1		11/17/12 21:06	24959-67-9	
Chloride	1.1	mg/L	1.0	0.50	1		11/17/12 21:06	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.011	1		11/17/12 21:06	16984-48-8	
Sulfate	859	mg/L	50.0	6.0	50		11/17/12 21:23	14808-79-8	

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133622

Sample: BLAINEOBF121114 Lab ID: 60133622002 Collected: 11/14/12 15:05 Received: 11/16/12 10:00 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	414000	ug/L	1000	358	10	11/16/12 17:45	11/19/12 15:23	7440-70-2	
Iron	3890000	ug/L	500	172	10	11/16/12 17:45	11/19/12 15:23	7439-89-6	
Magnesium	270000	ug/L	500	172	10	11/16/12 17:45	11/19/12 15:23	7439-95-4	
Potassium	721J	ug/L	5000	641	10	11/16/12 17:45	11/19/12 15:23	7440-09-7	
Sodium	29100	ug/L	5000	401	10	11/16/12 17:45	11/19/12 15:23	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	428000	ug/L	1000	358	10	11/16/12 17:45	11/20/12 10:57	7440-70-2	D9
Iron, Dissolved	3840000	ug/L	500	172	10	11/16/12 17:45	11/20/12 10:57	7439-89-6	
Lithium, Dissolved	450	ug/L	100	36.6	10	11/16/12 17:45	11/20/12 15:38	7439-93-2	
Magnesium, Dissolved	269000	ug/L	500	172	10	11/16/12 17:45	11/20/12 10:57	7439-95-4	
Potassium, Dissolved	1280J	ug/L	5000	641	10	11/16/12 17:45	11/20/12 10:57	7440-09-7	
Sodium, Dissolved	28000	ug/L	5000	401	10	11/16/12 17:45	11/20/12 10:57	7440-23-5	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	5520	ug/L	100	14.0	100	11/16/12 17:30	11/19/12 18:29	7440-38-2	
Cadmium	4260	ug/L	50.0	9.7	100	11/16/12 17:30	11/19/12 18:29	7440-43-9	
Chromium	268	ug/L	100	11.0	100	11/16/12 17:30	11/19/12 18:29	7440-47-3	
Cobalt	528	ug/L	100	4.8	100	11/16/12 17:30	11/19/12 18:29	7440-48-4	
Copper	38800	ug/L	100	45.0	100	11/16/12 17:30	11/19/12 18:29	7440-50-8	
Lead	1030	ug/L	100	5.1	100	11/16/12 17:30	11/19/12 18:29	7439-92-1	
Manganese	212000	ug/L	100	23.0	100	11/16/12 17:30	11/19/12 18:29	7439-96-5	
Nickel	555	ug/L	100	35.0	100	11/16/12 17:30	11/19/12 18:29	7440-02-0	
Selenium	64.5J	ug/L	100	35.0	100	11/16/12 17:30	11/19/12 18:29	7782-49-2	
Zinc	644000	ug/L	1000	160	100	11/16/12 17:30	11/19/12 18:29	7440-66-6	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	5410	ug/L	100	14.0	100	11/16/12 17:30	11/19/12 19:14	7440-38-2	
Cadmium, Dissolved	4180	ug/L	50.0	9.7	100	11/16/12 17:30	11/19/12 19:14	7440-43-9	
Chromium, Dissolved	265	ug/L	100	11.0	100	11/16/12 17:30	11/19/12 19:14	7440-47-3	
Cobalt, Dissolved	512	ug/L	100	4.8	100	11/16/12 17:30	11/19/12 19:14	7440-48-4	
Copper, Dissolved	37800	ug/L	100	45.0	100	11/16/12 17:30	11/19/12 19:14	7440-50-8	
Lead, Dissolved	1010	ug/L	100	5.1	100	11/16/12 17:30	11/19/12 19:14	7439-92-1	
Manganese, Dissolved	211000	ug/L	100	23.0	100	11/16/12 17:30	11/19/12 19:14	7439-96-5	
Nickel, Dissolved	542	ug/L	100	35.0	100	11/16/12 17:30	11/19/12 19:14	7440-02-0	
Selenium, Dissolved	60.4J	ug/L	100	35.0	100	11/16/12 17:30	11/19/12 19:14	7782-49-2	
Zinc, Dissolved	632000	ug/L	1000	160	100	11/16/12 17:30	11/19/12 19:14	7440-66-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		11/19/12 09:18		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		11/19/12 09:18		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		11/19/12 09:18		
Alkalinity, Total as CaCO ₃	ND	mg/L	20.0	1.2	1		11/19/12 09:18		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133622

Sample: BLAINEOBF121114		Lab ID: 60133622002		Collected: 11/14/12 15:05		Received: 11/16/12 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.078	1		11/17/12 21:40	24959-67-9	
Chloride	5.8	mg/L	1.0	0.50	1		11/17/12 21:40	16887-00-6	
Fluoride	50.0	mg/L	2.0	0.11	10		11/17/12 22:47	16984-48-8	
Sulfate	72400	mg/L	5000	600	5000		11/20/12 11:54	14808-79-8	

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133622

Sample: BLAINEIBF121114 Lab ID: 60133622003 Collected: 11/14/12 15:10 Received: 11/16/12 10:00 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	388000	ug/L	1000	358	10	11/16/12 17:45	11/19/12 15:25	7440-70-2	
Iron	1130000	ug/L	500	172	10	11/16/12 17:45	11/19/12 15:25	7439-89-6	
Magnesium	231000	ug/L	500	172	10	11/16/12 17:45	11/19/12 15:25	7439-95-4	
Potassium	5760	ug/L	5000	641	10	11/16/12 17:45	11/19/12 15:25	7440-09-7	
Sodium	5320	ug/L	5000	401	10	11/16/12 17:45	11/19/12 15:25	7440-23-5	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium, Dissolved	409000	ug/L	1000	358	10	11/16/12 17:45	11/20/12 11:00	7440-70-2	D9
Iron, Dissolved	1140000	ug/L	500	172	10	11/16/12 17:45	11/20/12 11:00	7439-89-6	D9
Lithium, Dissolved	288	ug/L	100	36.6	10	11/16/12 17:45	11/20/12 15:41	7439-93-2	
Magnesium, Dissolved	232000	ug/L	500	172	10	11/16/12 17:45	11/20/12 11:00	7439-95-4	D9
Potassium, Dissolved	5270	ug/L	5000	641	10	11/16/12 17:45	11/20/12 11:00	7440-09-7	
Sodium, Dissolved	4340J	ug/L	5000	401	10	11/16/12 17:45	11/20/12 11:00	7440-23-5	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	30.0J	ug/L	100	14.0	100	11/16/12 17:30	11/19/12 18:33	7440-38-2	
Cadmium	1510	ug/L	50.0	9.7	100	11/16/12 17:30	11/19/12 18:33	7440-43-9	
Chromium	154	ug/L	100	11.0	100	11/16/12 17:30	11/19/12 18:33	7440-47-3	
Cobalt	196	ug/L	100	4.8	100	11/16/12 17:30	11/19/12 18:33	7440-48-4	
Copper	17300	ug/L	100	45.0	100	11/16/12 17:30	11/19/12 18:33	7440-50-8	
Lead	400	ug/L	100	5.1	100	11/16/12 17:30	11/19/12 18:33	7439-92-1	
Manganese	112000	ug/L	100	23.0	100	11/16/12 17:30	11/19/12 18:33	7439-96-5	
Nickel	356	ug/L	100	35.0	100	11/16/12 17:30	11/19/12 18:33	7440-02-0	
Selenium	ND	ug/L	100	35.0	100	11/16/12 17:30	11/19/12 18:33	7782-49-2	D3
Zinc	266000	ug/L	1000	160	100	11/16/12 17:30	11/19/12 18:33	7440-66-6	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	29.3J	ug/L	100	14.0	100	11/16/12 17:30	11/19/12 19:18	7440-38-2	
Cadmium, Dissolved	1520	ug/L	50.0	9.7	100	11/16/12 17:30	11/19/12 19:18	7440-43-9	D9
Chromium, Dissolved	150	ug/L	100	11.0	100	11/16/12 17:30	11/19/12 19:18	7440-47-3	
Cobalt, Dissolved	198	ug/L	100	4.8	100	11/16/12 17:30	11/19/12 19:18	7440-48-4	D9
Copper, Dissolved	16600	ug/L	100	45.0	100	11/16/12 17:30	11/19/12 19:18	7440-50-8	
Lead, Dissolved	412	ug/L	100	5.1	100	11/16/12 17:30	11/19/12 19:18	7439-92-1	D9
Manganese, Dissolved	113000	ug/L	100	23.0	100	11/16/12 17:30	11/19/12 19:18	7439-96-5	D9
Nickel, Dissolved	360	ug/L	100	35.0	100	11/16/12 17:30	11/19/12 19:18	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	100	35.0	100	11/16/12 17:30	11/19/12 19:18	7782-49-2	D3
Zinc, Dissolved	270000	ug/L	1000	160	100	11/16/12 17:30	11/19/12 19:18	7440-66-6	D9
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity,Bicarbonate (CaCO3)	261	mg/L	20.0	1.2	1		11/19/12 09:21		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1.2	1		11/19/12 09:21		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1.2	1		11/19/12 09:21		
Alkalinity, Total as CaCO3	261	mg/L	20.0	1.2	1		11/19/12 09:21		

ANALYTICAL RESULTS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133622

Sample: BLAINEIBF121114		Lab ID: 60133622003		Collected: 11/14/12 15:10		Received: 11/16/12 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.078	1		11/17/12 23:03	24959-67-9	
Chloride	1.2	mg/L	1.0	0.50	1		11/17/12 23:03	16887-00-6	
Fluoride	47.7	mg/L	2.0	0.11	10		11/17/12 23:20	16984-48-8	
Sulfate	23400	mg/L	2000	240	2000		11/19/12 17:46	14808-79-8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133622

QC Batch: MPRP/20519 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60133622001, 60133622002, 60133622003

METHOD BLANK: 1100607 Matrix: Water

Associated Lab Samples: 60133622001, 60133622002, 60133622003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	ug/L	ND	100	11/19/12 15:08	
Iron	ug/L	ND	50.0	11/19/12 15:08	
Magnesium	ug/L	22.2J	50.0	11/19/12 15:08	
Potassium	ug/L	ND	500	11/19/12 15:08	
Sodium	ug/L	ND	500	11/19/12 15:08	

LABORATORY CONTROL SAMPLE: 1100608

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	9190	92	85-115	
Iron	ug/L	10000	9600	96	85-115	
Magnesium	ug/L	10000	9720	97	85-115	
Potassium	ug/L	10000	9700	97	85-115	
Sodium	ug/L	10000	10000	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1100609 1100610

Parameter	Units	60133505001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	211000	10000	10000	224000	222000	133	114	70-130	1	9	M1
Iron	ug/L	5200	10000	10000	14700	14700	95	95	70-130	0	10	
Magnesium	ug/L	18400	10000	10000	28100	28000	97	96	70-130	0	9	
Potassium	ug/L	25300	10000	10000	35500	35200	102	100	70-130	1	7	
Sodium	ug/L	12300	10000	10000	22700	22700	104	104	70-130	0	8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133622

QC Batch: MPRP/20524

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60133622001, 60133622002, 60133622003

METHOD BLANK: 1100643

Matrix: Water

Associated Lab Samples: 60133622001, 60133622002, 60133622003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	11/20/12 10:37	
Iron, Dissolved	ug/L	ND	50.0	11/20/12 10:37	
Lithium, Dissolved	ug/L	ND	10.0	11/20/12 15:18	
Magnesium, Dissolved	ug/L	ND	50.0	11/20/12 10:37	
Potassium, Dissolved	ug/L	ND	500	11/20/12 10:37	
Sodium, Dissolved	ug/L	ND	500	11/20/12 10:37	

LABORATORY CONTROL SAMPLE: 1100644

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9960	100	85-115	
Iron, Dissolved	ug/L	10000	10000	100	85-115	
Lithium, Dissolved	ug/L	1000	995	100	85-115	
Magnesium, Dissolved	ug/L	10000	10200	102	85-115	
Potassium, Dissolved	ug/L	10000	9980	100	85-115	
Sodium, Dissolved	ug/L	10000	10200	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1100645

1100646

Parameter	Units	60133622001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium, Dissolved	ug/L	195000	10000	10000	209000	207000	140	126	70-130	1	9 M1	
Iron, Dissolved	ug/L	ND	10000	10000	9900	9890	99	99	70-130	0	10	
Lithium, Dissolved	ug/L	58.1	1000	1000	1080	1090	102	103	70-130	1	20	
Magnesium, Dissolved	ug/L	24000	10000	10000	34000	34200	100	101	70-130	0	9	
Potassium, Dissolved	ug/L	296000	10000	10000	314000	310000	178	138	70-130	1	7 M1	
Sodium, Dissolved	ug/L	21700	10000	10000	32600	32600	109	109	70-130	0	8	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133622

QC Batch: MPRP/20522 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60133622001, 60133622002, 60133622003

METHOD BLANK: 1100634 Matrix: Water

Associated Lab Samples: 60133622001, 60133622002, 60133622003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	11/19/12 18:00	
Cadmium	ug/L	ND	0.50	11/19/12 18:00	
Chromium	ug/L	ND	1.0	11/19/12 18:00	
Cobalt	ug/L	ND	1.0	11/19/12 18:00	
Copper	ug/L	ND	1.0	11/19/12 18:00	
Lead	ug/L	ND	1.0	11/19/12 18:00	
Manganese	ug/L	ND	1.0	11/19/12 18:00	
Nickel	ug/L	ND	1.0	11/19/12 18:00	
Selenium	ug/L	ND	1.0	11/19/12 18:00	
Zinc	ug/L	ND	10.0	11/19/12 18:00	

LABORATORY CONTROL SAMPLE: 1100635

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	40.0	100	85-115	
Cadmium	ug/L	40	41.3	103	85-115	
Chromium	ug/L	40	40.1	100	85-115	
Cobalt	ug/L	40	39.0	98	85-115	
Copper	ug/L	40	39.8	100	85-115	
Lead	ug/L	40	39.4	98	85-115	
Manganese	ug/L	40	39.7	99	85-115	
Nickel	ug/L	40	39.7	99	85-115	
Selenium	ug/L	40	40.9	102	85-115	
Zinc	ug/L	100	107	107	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1100636 1100637

Parameter	Units	60133505001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	0.69J	40	40	41.0	42.6	101	105	70-130	4	20	
Cadmium	ug/L	14.6	40	40	51.6	52.3	92	94	70-130	1	20	
Chromium	ug/L	0.38J	40	40	39.0	39.2	97	97	70-130	0	20	
Cobalt	ug/L	2.5	40	40	39.9	39.2	94	92	70-130	2	20	
Copper	ug/L	74.5	40	40	110	108	88	84	70-130	1	20	
Lead	ug/L	6.5	40	40	47.5	47.0	103	101	70-130	1	20	
Manganese	ug/L	1810	40	40	1850	1840	90	70	70-130	0	20	
Nickel	ug/L	1.4	40	40	37.6	38.0	90	92	70-130	1	20	
Selenium	ug/L	ND	40	40	39.3	42.0	98	105	70-130	7	20	
Zinc	ug/L	2690	100	100	2770	2830	84	143	70-130	2	20 M1	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133622

QC Batch: MPRP/20521 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60133622001, 60133622002, 60133622003

METHOD BLANK: 1100630 Matrix: Water

Associated Lab Samples: 60133622001, 60133622002, 60133622003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	11/19/12 18:45	
Cadmium, Dissolved	ug/L	ND	0.50	11/19/12 18:45	
Chromium, Dissolved	ug/L	ND	1.0	11/19/12 18:45	
Cobalt, Dissolved	ug/L	ND	1.0	11/19/12 18:45	
Copper, Dissolved	ug/L	ND	1.0	11/19/12 18:45	
Lead, Dissolved	ug/L	ND	1.0	11/19/12 18:45	
Manganese, Dissolved	ug/L	ND	1.0	11/19/12 18:45	
Nickel, Dissolved	ug/L	ND	1.0	11/19/12 18:45	
Selenium, Dissolved	ug/L	ND	1.0	11/19/12 18:45	
Zinc, Dissolved	ug/L	ND	10.0	11/19/12 18:45	

LABORATORY CONTROL SAMPLE: 1100631

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	41.6	104	85-115	
Cadmium, Dissolved	ug/L	40	40.3	101	85-115	
Chromium, Dissolved	ug/L	40	40.4	101	85-115	
Cobalt, Dissolved	ug/L	40	40.2	100	85-115	
Copper, Dissolved	ug/L	40	39.9	100	85-115	
Lead, Dissolved	ug/L	40	40.0	100	85-115	
Manganese, Dissolved	ug/L	40	40.5	101	85-115	
Nickel, Dissolved	ug/L	40	40.2	101	85-115	
Selenium, Dissolved	ug/L	40	41.7	104	85-115	
Zinc, Dissolved	ug/L	100	108	108	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1100632 1100633

Parameter	Units	60133505001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	ND	40	40	40.4	39.9	101	99	70-130	1	20	
Cadmium, Dissolved	ug/L	13.4	40	40	50.7	49.6	93	90	70-130	2	20	
Chromium, Dissolved	ug/L	0.19J	40	40	38.5	37.9	96	94	70-130	2	20	
Cobalt, Dissolved	ug/L	2.5	40	40	39.4	38.7	92	91	70-130	2	20	
Copper, Dissolved	ug/L	5.2	40	40	39.8	39.0	86	85	70-130	2	20	
Lead, Dissolved	ug/L	ND	40	40	41.1	40.6	103	101	70-130	1	20	
Manganese, Dissolved	ug/L	1790	40	40	1840	1840	132	122	70-130	0	20 M1	
Nickel, Dissolved	ug/L	1.5	40	40	37.9	37.0	91	89	70-130	2	20	
Selenium, Dissolved	ug/L	ND	40	40	39.3	38.2	98	95	70-130	3	20	
Zinc, Dissolved	ug/L	2470	100	100	2570	2560	103	93	70-130	0	20	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133622

QC Batch: WET/38321

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60133622001, 60133622002, 60133622003

METHOD BLANK: 1101354

Matrix: Water

Associated Lab Samples: 60133622001, 60133622002, 60133622003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	11/19/12 08:56	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	11/19/12 08:56	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	11/19/12 08:56	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	11/19/12 08:56	

LABORATORY CONTROL SAMPLE: 1101355

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	478	96	90-110	

SAMPLE DUPLICATE: 1101356

Parameter	Units	60133505001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	107	108	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	107	108	1	9	

SAMPLE DUPLICATE: 1101357

Parameter	Units	60133038001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		24	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		27	
Alkalinity, Total as CaCO ₃	mg/L	27.8	27.4	1	9	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	27.8	27.4	1	9	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133622

QC Batch: WETA/22520 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60133622001, 60133622002, 60133622003

METHOD BLANK: 1101325 Matrix: Water

Associated Lab Samples: 60133622001, 60133622002, 60133622003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	11/17/12 18:36	
Chloride	mg/L	ND	1.0	11/17/12 18:36	
Fluoride	mg/L	ND	0.20	11/17/12 18:36	
Sulfate	mg/L	ND	1.0	11/17/12 18:36	

LABORATORY CONTROL SAMPLE: 1101326

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.9	97	90-110	
Chloride	mg/L	5	4.8	95	90-110	
Fluoride	mg/L	2.5	2.4	95	90-110	
Sulfate	mg/L	5	4.9	97	90-110	

MATRIX SPIKE SAMPLE: 1101327

Parameter	Units	60133112001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	5000	4780	96	75-119	
Chloride	mg/L	10900	5000	15400	90	64-118	
Fluoride	mg/L	ND	2500	2300	92	75-110	
Sulfate	mg/L	1690	5000	6070	88	61-119	

MATRIX SPIKE SAMPLE: 1101328

Parameter	Units	60133072001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	100	96.2	96	75-119	
Chloride	mg/L	223	100	314	91	64-118	
Fluoride	mg/L	ND	50	48.8	90	75-110	
Sulfate	mg/L	142	100	249	107	61-119	

QUALITY CONTROL DATA

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133622

QC Batch: WETA/22526

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60133622002, 60133622003

METHOD BLANK: 1101438

Matrix: Water

Associated Lab Samples: 60133622002, 60133622003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.0	11/19/12 11:49	

METHOD BLANK: 1102020

Matrix: Water

Associated Lab Samples: 60133622002, 60133622003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.0	11/20/12 12:11	

LABORATORY CONTROL SAMPLE: 1101439

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	4.8	97	90-110	

LABORATORY CONTROL SAMPLE: 1102021

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	4.8	96	90-110	

QUALIFIERS

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133622

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO ARGENTINE MINE SITE

Pace Project No.: 60133622

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60133622001	517SHAFT465121114	EPA 200.7	MPRP/20519	EPA 200.7	ICP/16715
60133622002	BLAINEOBF121114	EPA 200.7	MPRP/20519	EPA 200.7	ICP/16715
60133622003	BLAINEIBF121114	EPA 200.7	MPRP/20519	EPA 200.7	ICP/16715
60133622001	517SHAFT465121114	EPA 200.7	MPRP/20524	EPA 200.7	ICP/16717
60133622002	BLAINEOBF121114	EPA 200.7	MPRP/20524	EPA 200.7	ICP/16717
60133622003	BLAINEIBF121114	EPA 200.7	MPRP/20524	EPA 200.7	ICP/16717
60133622001	517SHAFT465121114	EPA 200.8	MPRP/20522	EPA 200.8	ICPM/1855
60133622002	BLAINEOBF121114	EPA 200.8	MPRP/20522	EPA 200.8	ICPM/1855
60133622003	BLAINEIBF121114	EPA 200.8	MPRP/20522	EPA 200.8	ICPM/1855
60133622001	517SHAFT465121114	EPA 200.8	MPRP/20521	EPA 200.8	ICPM/1851
60133622002	BLAINEOBF121114	EPA 200.8	MPRP/20521	EPA 200.8	ICPM/1851
60133622003	BLAINEIBF121114	EPA 200.8	MPRP/20521	EPA 200.8	ICPM/1851
60133622001	517SHAFT465121114	SM 2320B	WET/38321		
60133622002	BLAINEOBF121114	SM 2320B	WET/38321		
60133622003	BLAINEIBF121114	SM 2320B	WET/38321		
60133622001	517SHAFT465121114	EPA 300.0	WETA/22520		
60133622002	BLAINEOBF121114	EPA 300.0	WETA/22520		
60133622002	BLAINEOBF121114	EPA 300.0	WETA/22526		
60133622003	BLAINEIBF121114	EPA 300.0	WETA/22520		
60133622003	BLAINEIBF121114	EPA 300.0	WETA/22526		

May 16, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: Rico-Argentine Mine Site
Pace Project No.: 60143743

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on May 02, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Rico-Argentine Mine Site

Pace Project No.: 60143743

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 12-019-0

Illinois Certification #: 002885

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-12-3

Utah Certification #: KS000212012-2

Illinois Certification #: 003097

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Rico-Argentine Mine Site

Pace Project No.: 60143743

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60143743001	BLAINEOBF130430	Water	04/30/13 10:00	05/02/13 10:25
60143743002	BLAINEIBF130430	Water	04/30/13 10:10	05/02/13 10:25
60143743003	517SHAFT465130430	Water	04/30/13 11:20	05/02/13 10:25

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Rico-Argentine Mine Site

Pace Project No.: 60143743

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60143743001	BLAINEOBF130430	EPA 200.7	NDJ	8
		EPA 200.7	NDJ	8
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	TJT	1
		EPA 245.1	TJT	1
		SM 2320B	JMC1	4
		EPA 300.0	OL	4
60143743002	BLAINEIBF130430	EPA 200.7	NDJ	8
		EPA 200.7	NDJ	8
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	TJT	1
		EPA 245.1	TJT	1
		SM 2320B	JMC1	4
		EPA 300.0	OL	4
60143743003	517SHAFT465130430	EPA 200.7	NDJ	8
		EPA 200.7	NDJ	8
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	TJT	1
		EPA 245.1	TJT	1
		SM 2320B	JMC1	4
		EPA 300.0	OL	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60143743

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: May 16, 2013

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60143743

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: May 16, 2013

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/22557

B: Analyte was detected in the associated method blank.

- BLANK for HBN 289418 [MPRP/225 (Lab ID: 1180925)]
- Potassium, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60143743

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: May 16, 2013

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/22555

B: Analyte was detected in the associated method blank.

- BLANK for HBN 289416 [MPRP/225 (Lab ID: 1180911)]
- Chromium

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/22555

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- BLAINEIBF130430 (Lab ID: 60143743002)
 - Selenium
- BLAINEOBF130430 (Lab ID: 60143743001)
 - Selenium

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60143743

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: May 16, 2013

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/22558

B: Analyte was detected in the associated method blank.

- BLANK for HBN 289419 [MPRP/225 (Lab ID: 1180931)
- Chromium, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MPRP/22558

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- BLAINEIBF130430 (Lab ID: 60143743002)
 - Selenium, Dissolved
- BLAINEOBF130430 (Lab ID: 60143743001)
 - Selenium, Dissolved

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60143743

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: May 16, 2013

General Information:

3 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60143743

Method: EPA 245.1

Description: 245.1 Mercury, Dissolved

Client: BP AMEC

Date: May 16, 2013

General Information:

3 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60143743

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: May 16, 2013

General Information:

3 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60143743

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: May 16, 2013

General Information:

3 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60143743

Sample: BLAINEOBF130430 Lab ID: 60143743001 Collected: 04/30/13 10:00 Received: 05/02/13 10:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	248000	ug/L	750	166	10	05/03/13 16:00	05/07/13 14:11	7429-90-5	
Calcium	414000	ug/L	1000	104	10	05/03/13 16:00	05/07/13 14:11	7440-70-2	
Iron	2180000	ug/L	500	116	10	05/03/13 16:00	05/07/13 14:11	7439-89-6	
Lithium	317	ug/L	100	24.2	10	05/03/13 16:00	05/07/13 14:11	7439-93-2	
Magnesium	228000	ug/L	500	64.8	10	05/03/13 16:00	05/07/13 14:11	7439-95-4	
Potassium	ND	ug/L	5000	444	10	05/03/13 16:00	05/07/13 14:11	7440-09-7	
Sodium	12200	ug/L	5000	217	10	05/03/13 16:00	05/07/13 14:11	7440-23-5	
Zinc	444000	ug/L	1000	66.6	20	05/03/13 16:00	05/07/13 17:19	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	257000	ug/L	750	166	10	05/03/13 16:00	05/07/13 14:37	7429-90-5	D9
Calcium, Dissolved	429000	ug/L	1000	104	10	05/03/13 16:00	05/07/13 14:37	7440-70-2	D9
Iron, Dissolved	2250000	ug/L	500	116	10	05/03/13 16:00	05/07/13 14:37	7439-89-6	D9
Lithium, Dissolved	338	ug/L	100	24.2	10	05/03/13 16:00	05/07/13 14:37	7439-93-2	D9
Magnesium, Dissolved	234000	ug/L	500	64.8	10	05/03/13 16:00	05/07/13 14:37	7439-95-4	D9
Potassium, Dissolved	519J	ug/L	5000	444	10	05/03/13 16:00	05/07/13 14:37	7440-09-7	B
Sodium, Dissolved	12800	ug/L	5000	217	10	05/03/13 16:00	05/07/13 14:37	7440-23-5	D9
Zinc, Dissolved	436000	ug/L	1000	66.6	20	05/03/13 16:00	05/07/13 17:16	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	2550	ug/L	100	5.0	100	05/03/13 16:00	05/14/13 16:15	7440-38-2	M6
Cadmium	2830	ug/L	50.0	5.0	100	05/03/13 16:00	05/14/13 16:15	7440-43-9	M6
Chromium	173	ug/L	100	7.0	100	05/03/13 16:00	05/14/13 16:15	7440-47-3	B
Cobalt	290	ug/L	100	8.0	100	05/03/13 16:00	05/14/13 16:15	7440-48-4	
Copper	24000	ug/L	100	12.0	100	05/03/13 16:00	05/14/13 16:15	7440-50-8	M6
Lead	598	ug/L	100	3.0	100	05/03/13 16:00	05/14/13 16:15	7439-92-1	
Manganese	129000	ug/L	100	14.0	100	05/03/13 16:00	05/14/13 16:15	7439-96-5	M6
Nickel	370	ug/L	100	7.0	100	05/03/13 16:00	05/14/13 16:15	7440-02-0	
Selenium	ND	ug/L	100	14.0	100	05/03/13 16:00	05/14/13 16:15	7782-49-2	D3,M6
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	2630	ug/L	100	5.0	100	05/03/13 16:00	05/14/13 15:08	7440-38-2	D9,M6
Cadmium, Dissolved	2860	ug/L	50.0	5.0	100	05/03/13 16:00	05/14/13 15:08	7440-43-9	D9,M6
Chromium, Dissolved	185	ug/L	100	7.0	100	05/03/13 16:00	05/14/13 15:08	7440-47-3	D9
Cobalt, Dissolved	299	ug/L	100	8.0	100	05/03/13 16:00	05/14/13 15:08	7440-48-4	D9
Copper, Dissolved	24800	ug/L	100	12.0	100	05/03/13 16:00	05/14/13 15:08	7440-50-8	D9,M6
Lead, Dissolved	608	ug/L	100	3.0	100	05/03/13 16:00	05/14/13 15:08	7439-92-1	D9,M6
Manganese, Dissolved	132000	ug/L	100	14.0	100	05/03/13 16:00	05/14/13 15:08	7439-96-5	D9,M6
Nickel, Dissolved	376	ug/L	100	7.0	100	05/03/13 16:00	05/14/13 15:08	7440-02-0	D9,M6
Selenium, Dissolved	ND	ug/L	100	14.0	100	05/03/13 16:00	05/14/13 15:08	7782-49-2	D3,M6
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	05/06/13 16:45	05/07/13 09:58	7439-97-6	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60143743

Sample: BLAINEOBF130430		Lab ID: 60143743001		Collected: 04/30/13 10:00		Received: 05/02/13 10:25		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND ug/L		0.20	0.14	1	05/07/13 09:25	05/07/13 13:05	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	ND mg/L		20.0	4.9	1		05/13/13 08:00		
Alkalinity, Carbonate (CaCO ₃)	ND mg/L		20.0	4.9	1		05/13/13 08:00		
Alkalinity, Hydroxide (CaCO ₃)	ND mg/L		20.0	4.9	1		05/13/13 08:00		
Alkalinity, Total as CaCO ₃	ND mg/L		20.0	4.9	1		05/13/13 08:00		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND mg/L		1.0	0.11	1		05/14/13 21:39	24959-67-9	
Chloride	ND mg/L		1.0	0.016	1		05/14/13 21:39	16887-00-6	
Fluoride	33.5 mg/L		2.0	0.22	10		05/15/13 14:37	16984-48-8	
Sulfate	23500 mg/L		2000	360	2000		05/16/13 14:56	14808-79-8	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60143743

Sample: BLAINEIBF130430 Lab ID: 60143743002 Collected: 04/30/13 10:10 Received: 05/02/13 10:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	199000	ug/L	750	166	10	05/03/13 16:00	05/07/13 14:15	7429-90-5	M6
Calcium	403000	ug/L	1000	104	10	05/03/13 16:00	05/07/13 14:15	7440-70-2	M6
Iron	1020000	ug/L	500	116	10	05/03/13 16:00	05/07/13 14:15	7439-89-6	M6
Lithium	247	ug/L	100	24.2	10	05/03/13 16:00	05/07/13 14:15	7439-93-2	
Magnesium	213000	ug/L	500	64.8	10	05/03/13 16:00	05/07/13 14:15	7439-95-4	M6
Potassium	563J	ug/L	5000	444	10	05/03/13 16:00	05/07/13 14:15	7440-09-7	
Sodium	4390J	ug/L	5000	217	10	05/03/13 16:00	05/07/13 14:15	7440-23-5	
Zinc	183000	ug/L	500	33.3	10	05/03/13 16:00	05/07/13 14:15	7440-66-6	M6
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	199000	ug/L	750	166	10	05/03/13 16:00	05/07/13 14:40	7429-90-5	M6
Calcium, Dissolved	404000	ug/L	1000	104	10	05/03/13 16:00	05/07/13 14:40	7440-70-2	D9,M6
Iron, Dissolved	1010000	ug/L	500	116	10	05/03/13 16:00	05/07/13 14:40	7439-89-6	M6
Lithium, Dissolved	249	ug/L	100	24.2	10	05/03/13 16:00	05/07/13 14:40	7439-93-2	D9
Magnesium, Dissolved	211000	ug/L	500	64.8	10	05/03/13 16:00	05/07/13 14:40	7439-95-4	M6
Potassium, Dissolved	769J	ug/L	5000	444	10	05/03/13 16:00	05/07/13 14:40	7440-09-7	B
Sodium, Dissolved	4450J	ug/L	5000	217	10	05/03/13 16:00	05/07/13 14:40	7440-23-5	D9
Zinc, Dissolved	182000	ug/L	500	33.3	10	05/03/13 16:00	05/07/13 14:40	7440-66-6	M6
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	17.1J	ug/L	100	5.0	100	05/03/13 16:00	05/14/13 16:27	7440-38-2	
Cadmium	1240	ug/L	50.0	5.0	100	05/03/13 16:00	05/14/13 16:27	7440-43-9	
Chromium	171	ug/L	100	7.0	100	05/03/13 16:00	05/14/13 16:27	7440-47-3	B
Cobalt	170	ug/L	100	8.0	100	05/03/13 16:00	05/14/13 16:27	7440-48-4	
Copper	17100	ug/L	100	12.0	100	05/03/13 16:00	05/14/13 16:27	7440-50-8	
Lead	200	ug/L	100	3.0	100	05/03/13 16:00	05/14/13 16:27	7439-92-1	
Manganese	91400	ug/L	100	14.0	100	05/03/13 16:00	05/14/13 16:27	7439-96-5	
Nickel	328	ug/L	100	7.0	100	05/03/13 16:00	05/14/13 16:27	7440-02-0	
Selenium	ND	ug/L	100	14.0	100	05/03/13 16:00	05/14/13 16:27	7782-49-2	D3
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	19.5J	ug/L	100	5.0	100	05/03/13 16:00	05/14/13 15:25	7440-38-2	
Cadmium, Dissolved	1220	ug/L	50.0	5.0	100	05/03/13 16:00	05/14/13 15:25	7440-43-9	
Chromium, Dissolved	169	ug/L	100	7.0	100	05/03/13 16:00	05/14/13 15:25	7440-47-3	
Cobalt, Dissolved	174	ug/L	100	8.0	100	05/03/13 16:00	05/14/13 15:25	7440-48-4	D9
Copper, Dissolved	17600	ug/L	100	12.0	100	05/03/13 16:00	05/14/13 15:25	7440-50-8	D9
Lead, Dissolved	197	ug/L	100	3.0	100	05/03/13 16:00	05/14/13 15:25	7439-92-1	
Manganese, Dissolved	91400	ug/L	100	14.0	100	05/03/13 16:00	05/14/13 15:25	7439-96-5	
Nickel, Dissolved	342	ug/L	100	7.0	100	05/03/13 16:00	05/14/13 15:25	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	100	14.0	100	05/03/13 16:00	05/14/13 15:25	7782-49-2	D3
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	05/06/13 16:45	05/07/13 10:02	7439-97-6	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60143743

Sample: BLAINEIBF130430		Lab ID: 60143743002		Collected: 04/30/13 10:10		Received: 05/02/13 10:25		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	05/07/13 09:25	05/07/13 13:07	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	ND	mg/L	20.0	4.9	1		05/13/13 08:00		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	4.9	1		05/13/13 08:00		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	4.9	1		05/13/13 08:00		
Alkalinity, Total as CaCO ₃	ND	mg/L	20.0	4.9	1		05/13/13 08:00		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.11	1		05/14/13 21:55	24959-67-9	
Chloride	2.3	mg/L	1.0	0.016	1		05/14/13 21:55	16887-00-6	B
Fluoride	42.3	mg/L	2.0	0.22	10		05/15/13 15:10	16984-48-8	
Sulfate	15800	mg/L	2000	360	2000		05/16/13 15:11	14808-79-8	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60143743

Sample: 517SHAFT465130430 Lab ID: 60143743003 Collected: 04/30/13 11:20 Received: 05/02/13 10:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	114	ug/L	75.0	16.6	1	05/03/13 16:00	05/07/13 14:24	7429-90-5	
Calcium	279000	ug/L	100	10.4	1	05/03/13 16:00	05/07/13 14:24	7440-70-2	
Iron	725	ug/L	50.0	11.6	1	05/03/13 16:00	05/07/13 14:24	7439-89-6	
Lithium	42.2	ug/L	10.0	2.4	1	05/03/13 16:00	05/07/13 14:24	7439-93-2	
Magnesium	21600	ug/L	50.0	6.5	1	05/03/13 16:00	05/07/13 14:24	7439-95-4	
Potassium	97500	ug/L	500	44.4	1	05/03/13 16:00	05/07/13 14:24	7440-09-7	
Sodium	11000	ug/L	500	21.7	1	05/03/13 16:00	05/07/13 14:24	7440-23-5	
Zinc	3680	ug/L	50.0	3.3	1	05/03/13 16:00	05/07/13 14:24	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	72.2J	ug/L	75.0	16.6	1	05/03/13 16:00	05/07/13 14:56	7429-90-5	
Calcium, Dissolved	291000	ug/L	100	10.4	1	05/03/13 16:00	05/07/13 14:56	7440-70-2	D9
Iron, Dissolved	27.2J	ug/L	50.0	11.6	1	05/03/13 16:00	05/07/13 14:56	7439-89-6	
Lithium, Dissolved	44.1	ug/L	10.0	2.4	1	05/03/13 16:00	05/07/13 14:56	7439-93-2	
Magnesium, Dissolved	22300	ug/L	50.0	6.5	1	05/03/13 16:00	05/07/13 14:56	7439-95-4	D9
Potassium, Dissolved	99100	ug/L	500	44.4	1	05/03/13 16:00	05/07/13 14:56	7440-09-7	D9
Sodium, Dissolved	11200	ug/L	500	21.7	1	05/03/13 16:00	05/07/13 14:56	7440-23-5	D9
Zinc, Dissolved	3600	ug/L	50.0	3.3	1	05/03/13 16:00	05/07/13 14:56	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.18J	ug/L	1.0	0.050	1	05/03/13 16:00	05/14/13 16:31	7440-38-2	
Cadmium	15.0	ug/L	0.50	0.050	1	05/03/13 16:00	05/14/13 16:31	7440-43-9	
Chromium	0.90J	ug/L	1.0	0.070	1	05/03/13 16:00	05/14/13 16:31	7440-47-3	B
Cobalt	0.98J	ug/L	1.0	0.080	1	05/03/13 16:00	05/14/13 16:31	7440-48-4	
Copper	25.3	ug/L	1.0	0.12	1	05/03/13 16:00	05/14/13 16:31	7440-50-8	
Lead	2.5	ug/L	1.0	0.030	1	05/03/13 16:00	05/14/13 16:31	7439-92-1	
Manganese	1540	ug/L	1.0	0.14	1	05/03/13 16:00	05/14/13 16:31	7439-96-5	
Nickel	3.2	ug/L	1.0	0.070	1	05/03/13 16:00	05/14/13 16:31	7440-02-0	
Selenium	ND	ug/L	1.0	0.14	1	05/03/13 16:00	05/14/13 16:31	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.12J	ug/L	1.0	0.050	1	05/03/13 16:00	05/14/13 15:29	7440-38-2	
Cadmium, Dissolved	14.9	ug/L	0.50	0.050	1	05/03/13 16:00	05/14/13 15:29	7440-43-9	
Chromium, Dissolved	0.45J	ug/L	1.0	0.070	1	05/03/13 16:00	05/14/13 15:29	7440-47-3	B
Cobalt, Dissolved	1.0	ug/L	1.0	0.080	1	05/03/13 16:00	05/14/13 15:29	7440-48-4	D9
Copper, Dissolved	13.9	ug/L	1.0	0.12	1	05/03/13 16:00	05/14/13 15:29	7440-50-8	
Lead, Dissolved	0.088J	ug/L	1.0	0.030	1	05/03/13 16:00	05/14/13 15:29	7439-92-1	
Manganese, Dissolved	1580	ug/L	1.0	0.14	1	05/03/13 16:00	05/14/13 15:29	7439-96-5	D9
Nickel, Dissolved	3.2	ug/L	1.0	0.070	1	05/03/13 16:00	05/14/13 15:29	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	05/03/13 16:00	05/14/13 15:29	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	05/06/13 16:45	05/07/13 10:04	7439-97-6	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60143743

Sample: 517SHAFT465130430		Lab ID: 60143743003		Collected: 04/30/13 11:20		Received: 05/02/13 10:25		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	05/07/13 09:25	05/07/13 13:10	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	224	mg/L	20.0	4.9	1		05/13/13 08:00		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	4.9	1		05/13/13 08:00		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	4.9	1		05/13/13 08:00		
Alkalinity, Total as CaCO ₃	224	mg/L	20.0	4.9	1		05/13/13 08:00		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.11	1		05/14/13 22:10	24959-67-9	
Chloride	0.92J	mg/L	1.0	0.016	1		05/14/13 22:10	16887-00-6	B
Fluoride	1.7	mg/L	0.20	0.045	1		05/14/13 22:10	16984-48-8	
Sulfate	1020	mg/L	100	10.0	100		05/15/13 15:42	14808-79-8	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60143743

QC Batch: MERP/7315 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60143743001, 60143743002, 60143743003

METHOD BLANK: 1181865 Matrix: Water

Associated Lab Samples: 60143743001, 60143743002, 60143743003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	05/07/13 09:24	

LABORATORY CONTROL SAMPLE: 1181866

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1181867 1181868

Parameter	Units	60143743002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	5.0	5.0	99	99	70-130	0	20	

MATRIX SPIKE SAMPLE: 1181869

Parameter	Units	60143601001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	0.0076 mg/L	5	13.1	109	70-130	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60143743

QC Batch: MERP/7320

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury - Dissolved

Associated Lab Samples: 60143743001, 60143743002, 60143743003

METHOD BLANK: 1181944

Matrix: Water

Associated Lab Samples: 60143743001, 60143743002, 60143743003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	05/07/13 12:56	

LABORATORY CONTROL SAMPLE: 1181945

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	4.3	87	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1181946

1181947

Parameter	Units	60143743003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury, Dissolved	ug/L	ND	5	5	4.8	4.5	97	90	70-130	7	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60143743

QC Batch: MPRP/22556 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60143743001, 60143743002, 60143743003

METHOD BLANK: 1180918 Matrix: Water

Associated Lab Samples: 60143743001, 60143743002, 60143743003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	05/07/13 14:02	
Calcium	ug/L	ND	100	05/07/13 14:02	
Iron	ug/L	ND	50.0	05/07/13 14:02	
Lithium	ug/L	ND	10.0	05/07/13 14:02	
Magnesium	ug/L	9.4J	50.0	05/07/13 14:02	
Potassium	ug/L	ND	500	05/07/13 14:02	
Sodium	ug/L	ND	500	05/07/13 14:02	
Zinc	ug/L	ND	50.0	05/07/13 14:02	

LABORATORY CONTROL SAMPLE: 1180919

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	9880	99	85-115	
Calcium	ug/L	10000	9920	99	85-115	
Iron	ug/L	10000	9810	98	85-115	
Lithium	ug/L	1000	972	97	85-115	
Magnesium	ug/L	10000	9790	98	85-115	
Potassium	ug/L	10000	9840	98	85-115	
Sodium	ug/L	10000	10200	102	85-115	
Zinc	ug/L	1000	1000	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1180920 1180921

Parameter	Units	60143743002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	199000	10000	10000	202000	202000	30	27	70-130	0	8	M6
Calcium	ug/L	403000	10000	10000	403000	399000	5	-43	70-130	1	9	M6
Iron	ug/L	102000	10000	10000	1000000	994000	-170	-268	70-130	1	10	M6
Lithium	ug/L	247	1000	1000	1160	1190	92	95	70-130	3	20	
Magnesium	ug/L	213000	10000	10000	218000	216000	53	28	70-130	1	9	M6
Potassium	ug/L	563J	10000	10000	9890	10100	93	95	70-130	2	7	
Sodium	ug/L	4390J	10000	10000	14100	14300	97	99	70-130	2	8	
Zinc	ug/L	183000	1000	1000	180000	181000	-260	-200	70-130	0	11	M6

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60143743

QC Batch: MPRP/22557 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Dissolved
Associated Lab Samples: 60143743001, 60143743002, 60143743003

METHOD BLANK: 1180925 Matrix: Water
Associated Lab Samples: 60143743001, 60143743002, 60143743003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	05/07/13 14:33	
Calcium, Dissolved	ug/L	ND	100	05/07/13 14:33	
Iron, Dissolved	ug/L	ND	50.0	05/07/13 14:33	
Lithium, Dissolved	ug/L	ND	10.0	05/07/13 14:33	
Magnesium, Dissolved	ug/L	7.9J	50.0	05/07/13 14:33	
Potassium, Dissolved	ug/L	67.4J	500	05/07/13 14:33	
Sodium, Dissolved	ug/L	ND	500	05/07/13 14:33	
Zinc, Dissolved	ug/L	ND	50.0	05/07/13 14:33	

LABORATORY CONTROL SAMPLE: 1180926

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	9950	99	85-115	
Calcium, Dissolved	ug/L	10000	9950	99	85-115	
Iron, Dissolved	ug/L	10000	9770	98	85-115	
Lithium, Dissolved	ug/L	1000	989	99	85-115	
Magnesium, Dissolved	ug/L	10000	9750	98	85-115	
Potassium, Dissolved	ug/L	10000	10000	100	85-115	
Sodium, Dissolved	ug/L	10000	10400	104	85-115	
Zinc, Dissolved	ug/L	1000	1030	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1180927 1180928

Parameter	Units	60143743002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	199000	10000	10000	210000	213000	116	138	70-130	1	8	M6
Calcium, Dissolved	ug/L	404000	10000	10000	419000	427000	149	230	70-130	2	9	M6
Iron, Dissolved	ug/L	1010000	10000	10000	1030000	1050000	200	380	70-130	2	10	M6
Lithium, Dissolved	ug/L	249	1000	1000	1220	1240	97	99	70-130	1	20	
Magnesium, Dissolved	ug/L	211000	10000	10000	221000	224000	96	131	70-130	2	9	M6
Potassium, Dissolved	ug/L	769J	10000	10000	10500	10500	98	98	70-130	0	7	
Sodium, Dissolved	ug/L	4450J	10000	10000	14800	14900	103	104	70-130	1	8	
Zinc, Dissolved	ug/L	182000	1000	1000	182000	186000	20	350	70-130	2	11	M6

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60143743

QC Batch: MPRP/22555 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60143743001, 60143743002, 60143743003

METHOD BLANK: 1180911 Matrix: Water

Associated Lab Samples: 60143743001, 60143743002, 60143743003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	05/14/13 16:02	
Cadmium	ug/L	0.15J	0.50	05/14/13 16:02	
Chromium	ug/L	0.18J	1.0	05/14/13 16:02	
Cobalt	ug/L	ND	1.0	05/14/13 16:02	
Copper	ug/L	ND	1.0	05/14/13 16:02	
Lead	ug/L	0.14J	1.0	05/14/13 16:02	
Manganese	ug/L	ND	1.0	05/14/13 16:02	
Nickel	ug/L	ND	1.0	05/14/13 16:02	
Selenium	ug/L	ND	1.0	05/14/13 16:02	

LABORATORY CONTROL SAMPLE: 1180912

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	41.0	102	85-115	
Cadmium	ug/L	40	39.0	97	85-115	
Chromium	ug/L	40	40.6	101	85-115	
Cobalt	ug/L	40	40.6	102	85-115	
Copper	ug/L	40	41.2	103	85-115	
Lead	ug/L	40	41.1	103	85-115	
Manganese	ug/L	40	40.3	101	85-115	
Nickel	ug/L	40	41.3	103	85-115	
Selenium	ug/L	40	39.9	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1180913 1180914

Parameter	Units	60143743001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	2550	40	40	2630	2600	182	105	70-130	1	20	M6
Cadmium	ug/L	2830	40	40	2950	2900	298	190	70-130	1	20	M6
Chromium	ug/L	173	40	40	220	218	116	112	70-130	1	20	
Cobalt	ug/L	290	40	40	337	329	118	97	70-130	3	20	
Copper	ug/L	24000	40	40	24500	24000	1425	0	70-130	2	20	M6
Lead	ug/L	598	40	40	645	640	117	106	70-130	1	20	
Manganese	ug/L	129000	40	40	134000	129000	14250	1500	70-130	4	20	M6
Nickel	ug/L	370	40	40	407	415	90	112	70-130	2	20	
Selenium	ug/L	ND	40	40	30.2J	25.2J	76	63	70-130		20	M6

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60143743

QC Batch: MPRP/22558 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60143743001, 60143743002, 60143743003

METHOD BLANK: 1180931 Matrix: Water
Associated Lab Samples: 60143743001, 60143743002, 60143743003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	05/14/13 15:00	
Cadmium, Dissolved	ug/L	0.15J	0.50	05/14/13 15:00	
Chromium, Dissolved	ug/L	0.12J	1.0	05/14/13 15:00	
Cobalt, Dissolved	ug/L	ND	1.0	05/14/13 15:00	
Copper, Dissolved	ug/L	ND	1.0	05/14/13 15:00	
Lead, Dissolved	ug/L	ND	1.0	05/14/13 15:00	
Manganese, Dissolved	ug/L	ND	1.0	05/14/13 15:00	
Nickel, Dissolved	ug/L	ND	1.0	05/14/13 15:00	
Selenium, Dissolved	ug/L	ND	1.0	05/14/13 15:00	

LABORATORY CONTROL SAMPLE: 1180932

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	41.2	103	85-115	
Cadmium, Dissolved	ug/L	40	38.0	95	85-115	
Chromium, Dissolved	ug/L	40	40.9	102	85-115	
Cobalt, Dissolved	ug/L	40	41.0	103	85-115	
Copper, Dissolved	ug/L	40	41.7	104	85-115	
Lead, Dissolved	ug/L	40	40.3	101	85-115	
Manganese, Dissolved	ug/L	40	41.0	103	85-115	
Nickel, Dissolved	ug/L	40	41.1	103	85-115	
Selenium, Dissolved	ug/L	40	39.9	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1180933 1180934

Parameter	Units	60143743001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	2630	40	40	2620	2640	-28	8	70-130	1	20	M6
Cadmium, Dissolved	ug/L	2860	40	40	2860	2920	0	155	70-130	2	20	M6
Chromium, Dissolved	ug/L	185	40	40	219	222	84	91	70-130	1	20	
Cobalt, Dissolved	ug/L	299	40	40	339	335	98	89	70-130	1	20	
Copper, Dissolved	ug/L	24800	40	40	24700	24600	-325	-550	70-130	0	20	M6
Lead, Dissolved	ug/L	608	40	40	633	634	63	65	70-130	0	20	M6
Manganese, Dissolved	ug/L	132000	40	40	129000	131000	-8250	-2250	70-130	2	20	M6
Nickel, Dissolved	ug/L	376	40	40	399	414	58	97	70-130	4	20	M6
Selenium, Dissolved	ug/L	ND	40	40	26.8J	25.2J	46	42	70-130		20	M6

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60143743

QC Batch: WET/41219

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60143743001, 60143743002, 60143743003

METHOD BLANK: 1186051

Matrix: Water

Associated Lab Samples: 60143743001, 60143743002, 60143743003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	05/13/13 08:00	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	05/13/13 08:00	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	05/13/13 08:00	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	05/13/13 08:00	

LABORATORY CONTROL SAMPLE: 1186052

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	469	94	90-110	

SAMPLE DUPLICATE: 1186055

Parameter	Units	60143805001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	332	336	1	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	332	336	1	10	

SAMPLE DUPLICATE: 1186056

Parameter	Units	60143608001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	256	256	0	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	256	256	0	10	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60143743

QC Batch: WETA/24677 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60143743001, 60143743002, 60143743003

METHOD BLANK: 1186660 Matrix: Water

Associated Lab Samples: 60143743001, 60143743002, 60143743003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	05/14/13 19:36	
Chloride	mg/L	ND	1.0	05/14/13 19:36	
Fluoride	mg/L	ND	0.20	05/14/13 19:36	

METHOD BLANK: 1187294 Matrix: Water

Associated Lab Samples: 60143743001, 60143743002, 60143743003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.20	05/15/13 12:22	
Sulfate	mg/L	ND	1.0	05/15/13 12:22	

METHOD BLANK: 1187930 Matrix: Water

Associated Lab Samples: 60143743001, 60143743002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.0	05/16/13 13:23	

LABORATORY CONTROL SAMPLE: 1186661

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.7	95	90-110	
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	2.5	2.4	96	90-110	

LABORATORY CONTROL SAMPLE: 1187295

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.5	101	90-110	
Sulfate	mg/L	5	4.9	99	90-110	

LABORATORY CONTROL SAMPLE: 1187931

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	5.0	100	90-110	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60143743

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1186662 1186663												
Parameter	Units	5079677001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	3.2	5	5	7.8	7.8	91	92	75-119	1	10	
Chloride	mg/L	244	500	500	698	695	91	90	64-118	0	12	
Fluoride	mg/L	0.31	2.5	2.5	2.4	2.4	85	84	75-110	1	10	
Sulfate	mg/L	628	500	500	1070	1070	89	88	61-119	1	10	

MATRIX SPIKE SAMPLE: 1186664								
Parameter	Units	60144508003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers	
Bromide	mg/L	ND	100	104	104	75-119		
Chloride	mg/L	72.9	100	172	99	64-118		
Fluoride	mg/L	ND	50	53.1	106	75-110		
Sulfate	mg/L	133	100	236	103	61-119		

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QUALIFIERS

Project: Rico-Argentine Mine Site

Pace Project No.: 60143743

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rico-Argentine Mine Site

Pace Project No.: 60143743

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60143743001	BLAINEOBF130430	EPA 200.7	MPRP/22556	EPA 200.7	ICP/17901
60143743002	BLAINEIBF130430	EPA 200.7	MPRP/22556	EPA 200.7	ICP/17901
60143743003	517SHAFT465130430	EPA 200.7	MPRP/22556	EPA 200.7	ICP/17901
60143743001	BLAINEOBF130430	EPA 200.7	MPRP/22557	EPA 200.7	ICP/17900
60143743002	BLAINEIBF130430	EPA 200.7	MPRP/22557	EPA 200.7	ICP/17900
60143743003	517SHAFT465130430	EPA 200.7	MPRP/22557	EPA 200.7	ICP/17900
60143743001	BLAINEOBF130430	EPA 200.8	MPRP/22555	EPA 200.8	ICPM/2244
60143743002	BLAINEIBF130430	EPA 200.8	MPRP/22555	EPA 200.8	ICPM/2244
60143743003	517SHAFT465130430	EPA 200.8	MPRP/22555	EPA 200.8	ICPM/2244
60143743001	BLAINEOBF130430	EPA 200.8	MPRP/22558	EPA 200.8	ICPM/2243
60143743002	BLAINEIBF130430	EPA 200.8	MPRP/22558	EPA 200.8	ICPM/2243
60143743003	517SHAFT465130430	EPA 200.8	MPRP/22558	EPA 200.8	ICPM/2243
60143743001	BLAINEOBF130430	EPA 245.1	MERP/7315	EPA 245.1	MERC/7270
60143743002	BLAINEIBF130430	EPA 245.1	MERP/7315	EPA 245.1	MERC/7270
60143743003	517SHAFT465130430	EPA 245.1	MERP/7315	EPA 245.1	MERC/7270
60143743001	BLAINEOBF130430	EPA 245.1	MERP/7320	EPA 245.1	MERC/7275
60143743002	BLAINEIBF130430	EPA 245.1	MERP/7320	EPA 245.1	MERC/7275
60143743003	517SHAFT465130430	EPA 245.1	MERP/7320	EPA 245.1	MERC/7275
60143743001	BLAINEOBF130430	SM 2320B	WET/41219		
60143743002	BLAINEIBF130430	SM 2320B	WET/41219		
60143743003	517SHAFT465130430	SM 2320B	WET/41219		
60143743001	BLAINEOBF130430	EPA 300.0	WETA/24677		
60143743002	BLAINEIBF130430	EPA 300.0	WETA/24677		
60143743003	517SHAFT465130430	EPA 300.0	WETA/24677		

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Sample Condition Upon Receipt
ESI Tech Spec Client

WO#: 60143743



60143743

Client Name: BP Amec

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 1Z 733 W87 22 1005 6323 Pace Shipping Label Used? Yes ☒ No ☐

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☒ Bubble Bags ☐ Foam ☐ None ☐ Other ☐

Thermometer Used: T-112 / T-194 Type of Ice: Wet Blue ☐ None ☐ Samples received on ice, cooling process has begun.

Cooler Temperature: 1-2

Temperature should be above freezing to 6°C

Date and initials of person examining contents: 5/2/13 1110

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2. <u>tracking # not on COC.</u>
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses	Matrix: <u>water</u>	13.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed <u>5/2/13</u> Lot # of added preservative
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank lot # (if purchased):	<u>n/a</u>	15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
		16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:

Client Notification/ Resolution:

Copy COC to Client? Y ☐ N ☒ Field Data Required? Y ☐ N ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: dmw Date: 5/2/13

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: <u>1100</u>	Start:
End: <u>1110</u>	End:
Temp:	Temp:



Laboratory Management Program LaMP Chain of Custody Record

Page 1 of 1

BP/ARC Project Name: Rico-Argentine Mine Site

Req Due Date (mm/dd/yy): _____

Rush TAT: Yes No X

BP/ARC Facility No: _____

Lab Work Order Number: 601437A3

Lab Name: Pace Analytical Laboratories, Inc.				BP/ARC Facility Address: Rico-Argentine Mine				Consultant/Contractor: AMEC E&I, Inc.													
Lab Address: 9608 Loiret Blvd., Lenexa, KS 66219				City, State, ZIP Code: Rico, Colorado				Consultant/Contractor Project No: SA11161313													
Lab PM: Heather Wilson				Lead Regulatory Agency: U.S. EPA Region 8				Address: 10670 White Rock Road, Suite 100, Rancho Cordova, CA													
Lab Phone: (913) 563-1407				California Global ID No.: NA				Consultant/Contractor PM: Marc Lombardi													
Lab Shipping Acct: UPS # 733W87				Enfos Proposal No: D00LL-0006 WR 261586				Phone: 916-636-3200													
Lab Bottle Order No: NA				Accounting Mode: Provision <u>X</u> OOC-BU <u> </u> OOC-RM <u> </u>				Email Report/EDD To: lynda.lombardi@amec.com													
Other Info: 517 Injection Treatability Study				Stage: 4-Execute Activity: Spend				Invoice To: BP/ARC <u>X</u> Contractor <u> </u>													
BP/ARC EBM: Anthony Brown				Matrix		No. Containers / Preservative		Requested Analyses				Report Type & QC Level									
EBM Phone: 714-228-6770												Standard <u>X</u>									
EBM Email: anthony.brown@bp.com												Full Data Package <u> </u>									
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Methanol	Tot Metals-see notes (E200.7/200.8/E245.1)	Dis Metals-see notes (E200.7/200.8/E245.1)	Alkalinity-Total, HCO ₃ , CO ₃ , OH (SM2320B)	Bromide (E300.0)	Chloride (E300.0)	Fluoride (E300.0)	Sulfate (E300.0)	Comments	
	BLAINE OBF130430	4/30/13	1000		X		4	2	0	2	0	0		X	X	X	X	X	X	X	(E200.7) (E200.8) (E245.1) Dissolved metals samples are field filtered
	BLAINE OBF130430	4/30/13	1010		X		4	2	0	2	0	0		X	X	X	X	X	X	X	2
	57 SHAFT 465130430	4/30/13	1120		X		4	2	0	2	0	0		X	X	X	X	X	X	X	3 Metals are: Al, Ca, Fe, K, Li, Na, Mg, Zn (E200.7); As, Cd, Co, Cr, Cu, Mn, Ni, Pb, Se (E200.8); and Hg (E245.1)
Sampler's Name: <u>ABBY CAZIER</u>				Relinquished By / Affiliation				Date		Time		Accepted By / Affiliation				Date		Time			
Sampler's Company: <u>AMEC</u>				<u>JOHN S / AMEC</u>				5/1/13		1400		<u>John S / AMEC</u>				5/2/13		1025			
Shipment Method: <u>UPS</u>				Ship Date: <u>5/1/13</u>																	
Shipment Tracking No:																					
Special Instructions:																					
THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes <u> </u> No <u> </u> Temp Blank: Yes <u> </u> No <u> </u> Cooler Temp on Receipt: <u>1.2</u> °F/C Trip Blank: Yes <u> </u> No <u> </u> MS/MSD Sample Submitted: Yes <u> </u> No <u> </u>																					

June 06, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: 517 INJECTION TREATABILITY STU
Pace Project No.: 60145193

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on May 22, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 517 INJECTION TREATABILITY STU

Pace Project No.: 60145193

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

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SAMPLE SUMMARY

Project: 517 INJECTION TREATABILITY STU

Pace Project No.: 60145193

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60145193001	517SHAFT463130516	Water	05/16/13 12:10	05/22/13 10:30
60145193003	517SHAFT500130517	Water	05/17/13 11:46	05/22/13 10:30
60145193004	517SHAFT520130517	Water	05/17/13 13:55	05/22/13 10:30

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SAMPLE ANALYTE COUNT

Project: 517 INJECTION TREATABILITY STU

Pace Project No.: 60145193

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60145193001	517SHAFT463130516	EPA 200.7	NDJ	8
		EPA 200.7	NDJ	8
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	TJT	1
		EPA 245.1	TJT	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60145193003	517SHAFT500130517	EPA 200.7	NDJ	8
		EPA 200.7	NDJ	8
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	TJT	1
		EPA 245.1	TJT	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60145193004	517SHAFT520130517	EPA 200.7	NDJ	8
		EPA 200.7	NDJ	8
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	TJT	1
		EPA 245.1	TJT	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 517 INJECTION TREATABILITY STU

Pace Project No.: 60145193

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: June 06, 2013

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/22814

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60145193002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1195085)
 - Calcium
- MSD (Lab ID: 1195086)
 - Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 517 INJECTION TREATABILITY STU

Pace Project No.: 60145193

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: June 06, 2013

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/22817

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60145193001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1195097)
 - Calcium, Dissolved
- MSD (Lab ID: 1195098)
 - Calcium, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 517 INJECTION TREATABILITY STU

Pace Project No.: 60145193

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: June 06, 2013

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/22815

B: Analyte was detected in the associated method blank.

- BLANK for HBN 292478 [MPRP/228 (Lab ID: 1195087)]
- Chromium

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/22815

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60145193001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1195089)
- Manganese

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 517 INJECTION TREATABILITY STU
Pace Project No.: 60145193

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: June 06, 2013

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/22816

B: Analyte was detected in the associated method blank.

- BLANK for HBN 292479 [MPRP/228 (Lab ID: 1195091)
 - Chromium, Dissolved
 - Cobalt, Dissolved
 - Copper, Dissolved
 - Lead, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/22816

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60145193002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1195093)
 - Manganese, Dissolved
- MSD (Lab ID: 1195094)
 - Manganese, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 517 INJECTION TREATABILITY STU

Pace Project No.: 60145193

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: June 06, 2013

General Information:

3 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 517 INJECTION TREATABILITY STU

Pace Project No.: 60145193

Method: EPA 245.1

Description: 245.1 Mercury, Dissolved

Client: BP AMEC

Date: June 06, 2013

General Information:

3 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 517 INJECTION TREATABILITY STU

Pace Project No.: 60145193

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: June 06, 2013

General Information:

3 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 517 INJECTION TREATABILITY STU

Pace Project No.: 60145193

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: June 06, 2013

General Information:

3 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: WETA/24966

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60145188003, 60145193004

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1198591)
- Chloride

R1: RPD value was outside control limits.

- MSD (Lab ID: 1198591)
- Chloride

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: 517 INJECTION TREATABILITY STU

Sample Project No.: 60145193

Sample: 517SHAFT463130516 Lab ID: 60145193001 Collected: 05/16/13 12:10 Received: 05/22/13 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	280	ug/L	75.0	16.6	1	05/28/13 09:52	05/30/13 12:37	7429-90-5	
Calcium	276000	ug/L	100	10.4	1	05/28/13 09:52	05/30/13 12:37	7440-70-2	
Iron	2430	ug/L	50.0	11.6	1	05/28/13 09:52	05/30/13 12:37	7439-89-6	
Lithium	36.6	ug/L	10.0	2.4	1	05/28/13 09:52	05/30/13 12:37	7439-93-2	
Magnesium	21800	ug/L	50.0	6.5	1	05/28/13 09:52	05/30/13 12:37	7439-95-4	
Potassium	54600	ug/L	500	44.4	1	05/28/13 09:52	05/30/13 12:37	7440-09-7	
Sodium	10400	ug/L	500	21.7	1	05/28/13 09:52	05/30/13 12:37	7440-23-5	
Zinc	2830	ug/L	50.0	3.3	1	05/28/13 09:52	05/30/13 12:37	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	47.9J	ug/L	75.0	16.6	1	05/28/13 10:22	05/30/13 11:49	7429-90-5	
Calcium, Dissolved	294000	ug/L	100	10.4	1	05/28/13 10:22	05/30/13 11:49	7440-70-2	D9,M1
Iron, Dissolved	ND	ug/L	50.0	11.6	1	05/28/13 10:22	05/30/13 11:49	7439-89-6	
Lithium, Dissolved	34.2	ug/L	10.0	2.4	1	05/28/13 10:22	05/30/13 11:49	7439-93-2	
Magnesium, Dissolved	22800	ug/L	50.0	6.5	1	05/28/13 10:22	05/30/13 11:49	7439-95-4	D9
Potassium, Dissolved	55800	ug/L	500	44.4	1	05/28/13 10:22	05/30/13 11:49	7440-09-7	D9
Sodium, Dissolved	10700	ug/L	500	21.7	1	05/28/13 10:22	05/30/13 11:49	7440-23-5	D9
Zinc, Dissolved	2800	ug/L	50.0	3.3	1	05/28/13 10:22	05/30/13 11:49	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.92J	ug/L	1.0	0.050	1	05/28/13 09:56	05/29/13 15:25	7440-38-2	
Cadmium	12.6	ug/L	0.50	0.050	1	05/28/13 09:56	05/29/13 15:25	7440-43-9	
Chromium	0.73J	ug/L	1.0	0.070	1	05/28/13 09:56	05/29/13 15:25	7440-47-3	B
Cobalt	1.5	ug/L	1.0	0.080	1	05/28/13 09:56	05/29/13 15:25	7440-48-4	
Copper	70.9	ug/L	1.0	0.12	1	05/28/13 09:56	05/29/13 15:25	7440-50-8	
Lead	10.7	ug/L	1.0	0.030	1	05/28/13 09:56	05/29/13 15:25	7439-92-1	
Manganese	1580	ug/L	1.0	0.14	1	05/28/13 09:56	05/29/13 15:25	7439-96-5	M1
Nickel	4.2	ug/L	1.0	0.070	1	05/28/13 09:56	05/29/13 15:25	7440-02-0	
Selenium	ND	ug/L	1.0	0.14	1	05/28/13 09:56	05/29/13 15:25	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.083J	ug/L	1.0	0.050	1	05/28/13 10:22	05/29/13 14:20	7440-38-2	
Cadmium, Dissolved	11.1	ug/L	0.50	0.050	1	05/28/13 10:22	05/29/13 14:20	7440-43-9	
Chromium, Dissolved	0.97J	ug/L	1.0	0.070	1	05/28/13 10:22	05/29/13 14:20	7440-47-3	B
Cobalt, Dissolved	1.3	ug/L	1.0	0.080	1	05/28/13 10:22	05/29/13 14:20	7440-48-4	
Copper, Dissolved	12.2	ug/L	1.0	0.12	1	05/28/13 10:22	05/29/13 14:20	7440-50-8	
Lead, Dissolved	0.31J	ug/L	1.0	0.030	1	05/28/13 10:22	05/29/13 14:20	7439-92-1	B
Manganese, Dissolved	1390	ug/L	1.0	0.14	1	05/28/13 10:22	05/29/13 14:20	7439-96-5	
Nickel, Dissolved	4.2	ug/L	1.0	0.070	1	05/28/13 10:22	05/29/13 14:20	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	05/28/13 10:22	05/29/13 14:20	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	05/24/13 15:25	05/27/13 17:10	7439-97-6	

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ANALYTICAL RESULTS

Project: 517 INJECTION TREATABILITY STU

Pace Project No.: 60145193

Sample: 517SHAFT463130516 Lab ID: 60145193001 Collected: 05/16/13 12:10 Received: 05/22/13 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	05/24/13 11:05	05/27/13 12:01	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	215	mg/L	20.0	1.2	1		05/29/13 08:51		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		05/29/13 08:51		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		05/29/13 08:51		
Alkalinity, Total as CaCO ₃	215	mg/L	20.0	1.2	1		05/29/13 08:51		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	0.67J	mg/L	1.0	0.061	1		06/04/13 20:18	24959-67-9	
Chloride	1.0	mg/L	1.0	0.054	1		06/04/13 20:18	16887-00-6	
Fluoride	1.5	mg/L	0.20	0.0090	1		06/04/13 20:18	16984-48-8	
Sulfate	701	mg/L	100	7.6	100		06/04/13 21:07	14808-79-8	

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ANALYTICAL RESULTS

Project: 517 INJECTION TREATABILITY STU

Pace Project No.: 60145193

Sample: 517SHAFT500130517 Lab ID: 60145193003 Collected: 05/17/13 11:46 Received: 05/22/13 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	368	ug/L	75.0	16.6	1	05/28/13 09:52	05/30/13 12:41	7429-90-5	
Calcium	280000	ug/L	100	10.4	1	05/28/13 09:52	05/30/13 12:41	7440-70-2	
Iron	3900	ug/L	50.0	11.6	1	05/28/13 09:52	05/30/13 12:41	7439-89-6	
Lithium	34.4	ug/L	10.0	2.4	1	05/28/13 09:52	05/30/13 12:41	7439-93-2	
Magnesium	21700	ug/L	50.0	6.5	1	05/28/13 09:52	05/30/13 12:41	7439-95-4	
Potassium	52400	ug/L	500	44.4	1	05/28/13 09:52	05/30/13 12:41	7440-09-7	
Sodium	10300	ug/L	500	21.7	1	05/28/13 09:52	05/30/13 12:41	7440-23-5	
Zinc	2950	ug/L	50.0	3.3	1	05/28/13 09:52	05/30/13 12:41	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	62.4J	ug/L	75.0	16.6	1	05/28/13 10:22	05/30/13 12:01	7429-90-5	
Calcium, Dissolved	289000	ug/L	100	10.4	1	05/28/13 10:22	05/30/13 12:01	7440-70-2	D9
Iron, Dissolved	ND	ug/L	50.0	11.6	1	05/28/13 10:22	05/30/13 12:01	7439-89-6	
Lithium, Dissolved	35.5	ug/L	10.0	2.4	1	05/28/13 10:22	05/30/13 12:01	7439-93-2	D9
Magnesium, Dissolved	22500	ug/L	50.0	6.5	1	05/28/13 10:22	05/30/13 12:01	7439-95-4	D9
Potassium, Dissolved	53000	ug/L	500	44.4	1	05/28/13 10:22	05/30/13 12:01	7440-09-7	D9
Sodium, Dissolved	10600	ug/L	500	21.7	1	05/28/13 10:22	05/30/13 12:01	7440-23-5	D9
Zinc, Dissolved	2660	ug/L	50.0	3.3	1	05/28/13 10:22	05/30/13 12:01	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	2.3	ug/L	1.0	0.050	1	05/28/13 09:56	05/29/13 15:37	7440-38-2	
Cadmium	13.5	ug/L	0.50	0.050	1	05/28/13 09:56	05/29/13 15:37	7440-43-9	
Chromium	1.4	ug/L	1.0	0.070	1	05/28/13 09:56	05/29/13 15:37	7440-47-3	
Cobalt	1.8	ug/L	1.0	0.080	1	05/28/13 09:56	05/29/13 15:37	7440-48-4	
Copper	80.7	ug/L	1.0	0.12	1	05/28/13 09:56	05/29/13 15:37	7440-50-8	
Lead	30.2	ug/L	1.0	0.030	1	05/28/13 09:56	05/29/13 15:37	7439-92-1	
Manganese	1850	ug/L	1.0	0.14	1	05/28/13 09:56	05/29/13 15:37	7439-96-5	
Nickel	4.7	ug/L	1.0	0.070	1	05/28/13 09:56	05/29/13 15:37	7440-02-0	
Selenium	ND	ug/L	1.0	0.14	1	05/28/13 09:56	05/29/13 15:37	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.13J	ug/L	1.0	0.050	1	05/28/13 10:22	05/29/13 14:24	7440-38-2	
Cadmium, Dissolved	10.9	ug/L	0.50	0.050	1	05/28/13 10:22	05/29/13 14:24	7440-43-9	
Chromium, Dissolved	0.61J	ug/L	1.0	0.070	1	05/28/13 10:22	05/29/13 14:24	7440-47-3	B
Cobalt, Dissolved	1.2	ug/L	1.0	0.080	1	05/28/13 10:22	05/29/13 14:24	7440-48-4	
Copper, Dissolved	9.0	ug/L	1.0	0.12	1	05/28/13 10:22	05/29/13 14:24	7440-50-8	
Lead, Dissolved	0.31J	ug/L	1.0	0.030	1	05/28/13 10:22	05/29/13 14:24	7439-92-1	B
Manganese, Dissolved	1340	ug/L	1.0	0.14	1	05/28/13 10:22	05/29/13 14:24	7439-96-5	
Nickel, Dissolved	4.1	ug/L	1.0	0.070	1	05/28/13 10:22	05/29/13 14:24	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	05/28/13 10:22	05/29/13 14:24	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	05/24/13 15:25	05/27/13 17:12	7439-97-6	

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ANALYTICAL RESULTS

Project: 517 INJECTION TREATABILITY STU

Pace Project No.: 60145193

Sample: 517SHAFT500130517 Lab ID: 60145193003 Collected: 05/17/13 11:46 Received: 05/22/13 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	05/24/13 11:05	05/27/13 12:03	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	224	mg/L	20.0	1.2	1		05/29/13 09:31		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		05/29/13 09:31		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		05/29/13 09:31		
Alkalinity, Total as CaCO ₃	224	mg/L	20.0	1.2	1		05/29/13 09:31		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	0.60J	mg/L	1.0	0.061	1		06/04/13 21:23	24959-67-9	
Chloride	0.99J	mg/L	1.0	0.054	1		06/04/13 21:23	16887-00-6	
Fluoride	1.6	mg/L	0.20	0.0090	1		06/04/13 21:23	16984-48-8	
Sulfate	707	mg/L	100	7.6	100		06/04/13 21:40	14808-79-8	

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ANALYTICAL RESULTS

Project: 517 INJECTION TREATABILITY STU

Pace Project No.: 60145193

Sample: 517SHAFT520130517 Lab ID: 60145193004 Collected: 05/17/13 13:55 Received: 05/22/13 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	1240	ug/L	75.0	16.6	1	05/28/13 09:52	05/30/13 12:44	7429-90-5	
Calcium	294000	ug/L	100	10.4	1	05/28/13 09:52	05/30/13 12:44	7440-70-2	
Iron	18500	ug/L	50.0	11.6	1	05/28/13 09:52	05/30/13 12:44	7439-89-6	
Lithium	36.5	ug/L	10.0	2.4	1	05/28/13 09:52	05/30/13 12:44	7439-93-2	
Magnesium	21700	ug/L	50.0	6.5	1	05/28/13 09:52	05/30/13 12:44	7439-95-4	
Potassium	52300	ug/L	500	44.4	1	05/28/13 09:52	05/30/13 12:44	7440-09-7	
Sodium	10200	ug/L	500	21.7	1	05/28/13 09:52	05/30/13 12:44	7440-23-5	
Zinc	4310	ug/L	50.0	3.3	1	05/28/13 09:52	05/30/13 12:44	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	52.4J	ug/L	75.0	16.6	1	05/28/13 10:22	05/30/13 12:05	7429-90-5	
Calcium, Dissolved	290000	ug/L	100	10.4	1	05/28/13 10:22	05/30/13 12:05	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	11.6	1	05/28/13 10:22	05/30/13 12:05	7439-89-6	
Lithium, Dissolved	34.7	ug/L	10.0	2.4	1	05/28/13 10:22	05/30/13 12:05	7439-93-2	
Magnesium, Dissolved	22100	ug/L	50.0	6.5	1	05/28/13 10:22	05/30/13 12:05	7439-95-4	D9
Potassium, Dissolved	52500	ug/L	500	44.4	1	05/28/13 10:22	05/30/13 12:05	7440-09-7	D9
Sodium, Dissolved	10500	ug/L	500	21.7	1	05/28/13 10:22	05/30/13 12:05	7440-23-5	D9
Zinc, Dissolved	2600	ug/L	50.0	3.3	1	05/28/13 10:22	05/30/13 12:05	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	10.2	ug/L	1.0	0.050	1	05/28/13 09:56	05/29/13 15:41	7440-38-2	
Cadmium	23.3	ug/L	0.50	0.050	1	05/28/13 09:56	05/29/13 15:41	7440-43-9	
Chromium	2.7	ug/L	1.0	0.070	1	05/28/13 09:56	05/29/13 15:41	7440-47-3	
Cobalt	4.3	ug/L	1.0	0.080	1	05/28/13 09:56	05/29/13 15:41	7440-48-4	
Copper	274	ug/L	1.0	0.12	1	05/28/13 09:56	05/29/13 15:41	7440-50-8	
Lead	160	ug/L	1.0	0.030	1	05/28/13 09:56	05/29/13 15:41	7439-92-1	
Manganese	4110	ug/L	1.0	0.14	1	05/28/13 09:56	05/29/13 15:41	7439-96-5	
Nickel	5.8	ug/L	1.0	0.070	1	05/28/13 09:56	05/29/13 15:41	7440-02-0	
Selenium	0.18J	ug/L	1.0	0.14	1	05/28/13 09:56	05/29/13 15:41	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.096J	ug/L	1.0	0.050	1	05/28/13 10:22	05/29/13 14:28	7440-38-2	
Cadmium, Dissolved	11.0	ug/L	0.50	0.050	1	05/28/13 10:22	05/29/13 14:28	7440-43-9	
Chromium, Dissolved	0.69J	ug/L	1.0	0.070	1	05/28/13 10:22	05/29/13 14:28	7440-47-3	B
Cobalt, Dissolved	1.0	ug/L	1.0	0.080	1	05/28/13 10:22	05/29/13 14:28	7440-48-4	B
Copper, Dissolved	6.3	ug/L	1.0	0.12	1	05/28/13 10:22	05/29/13 14:28	7440-50-8	B
Lead, Dissolved	0.35J	ug/L	1.0	0.030	1	05/28/13 10:22	05/29/13 14:28	7439-92-1	B
Manganese, Dissolved	1250	ug/L	1.0	0.14	1	05/28/13 10:22	05/29/13 14:28	7439-96-5	
Nickel, Dissolved	4.1	ug/L	1.0	0.070	1	05/28/13 10:22	05/29/13 14:28	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	05/28/13 10:22	05/29/13 14:28	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	05/24/13 15:25	05/27/13 17:15	7439-97-6	

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ANALYTICAL RESULTS

Project: 517 INJECTION TREATABILITY STU

Pace Project No.: 60145193

Sample: 517SHAFT520130517 Lab ID: 60145193004 Collected: 05/17/13 13:55 Received: 05/22/13 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	05/24/13 11:05	05/27/13 12:05	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	230	mg/L	20.0	1.2	1		05/29/13 09:35		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		05/29/13 09:35		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		05/29/13 09:35		
Alkalinity, Total as CaCO ₃	230	mg/L	20.0	1.2	1		05/29/13 09:35		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	0.57J	mg/L	1.0	0.061	1		06/04/13 21:56	24959-67-9	
Chloride	0.96J	mg/L	1.0	0.054	1		06/04/13 21:56	16887-00-6	
Fluoride	1.6	mg/L	0.20	0.0090	1		06/04/13 21:56	16984-48-8	
Sulfate	707	mg/L	100	7.6	100		06/04/13 22:29	14808-79-8	

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QUALITY CONTROL DATA

Project: 517 INJECTION TREATABILITY STU

Pace Project No.: 60145193

QC Batch: MERP/7379 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60145193001, 60145193003, 60145193004

METHOD BLANK: 1193937 Matrix: Water

Associated Lab Samples: 60145193001, 60145193003, 60145193004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	05/27/13 15:48	

LABORATORY CONTROL SAMPLE: 1193938

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.5	90	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1193939 1193940

Parameter	Units	60145193002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.2	4.4	85	87	70-130	3	20	

MATRIX SPIKE SAMPLE: 1193941

Parameter	Units	60145296004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	ND	5	4.2	81	70-130	

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QUALITY CONTROL DATA

Project: 517 INJECTION TREATABILITY STU

Pace Project No.: 60145193

QC Batch: MERP/7377 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury - Dissolved
Associated Lab Samples: 60145193001, 60145193003, 60145193004

METHOD BLANK: 1193553 Matrix: Water

Associated Lab Samples: 60145193001, 60145193003, 60145193004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	05/27/13 11:40	

LABORATORY CONTROL SAMPLE: 1193554

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	4.4	87	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1193555 1193556

Parameter	Units	60145193002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury, Dissolved	ug/L	ND	5	5	4.4	4.1	88	82	70-130	7	20	

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QUALITY CONTROL DATA

Project: 517 INJECTION TREATABILITY STU

Pace Project No.: 60145193

QC Batch: MPRP/22814 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60145193001, 60145193003, 60145193004

METHOD BLANK: 1195083 Matrix: Water

Associated Lab Samples: 60145193001, 60145193003, 60145193004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	05/30/13 12:22	
Calcium	ug/L	ND	100	05/30/13 12:22	
Iron	ug/L	ND	50.0	05/30/13 12:22	
Lithium	ug/L	ND	10.0	05/30/13 12:22	
Magnesium	ug/L	ND	50.0	05/30/13 12:22	
Potassium	ug/L	ND	500	05/30/13 12:22	
Sodium	ug/L	ND	500	05/30/13 12:22	
Zinc	ug/L	ND	50.0	05/30/13 12:22	

LABORATORY CONTROL SAMPLE: 1195084

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	10200	102	85-115	
Calcium	ug/L	10000	9740	97	85-115	
Iron	ug/L	10000	9280	93	85-115	
Lithium	ug/L	1000	1030	103	85-115	
Magnesium	ug/L	10000	9530	95	85-115	
Potassium	ug/L	10000	10200	102	85-115	
Sodium	ug/L	10000	10400	104	85-115	
Zinc	ug/L	1000	1000	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1195085 1195086

Parameter	Units	60145193002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	542	10000	10000	10700	10600	102	101	70-130	1	8	
Calcium	ug/L	285000	10000	10000	290000	288000	53	25	70-130	1	9 M1	
Iron	ug/L	4740	10000	10000	13800	13800	90	91	70-130	0	10	
Lithium	ug/L	35.5	1000	1000	1100	1100	106	107	70-130	0	20	
Magnesium	ug/L	22000	10000	10000	31100	30900	90	88	70-130	1	9	
Potassium	ug/L	54100	10000	10000	64500	64400	105	103	70-130	0	7	
Sodium	ug/L	10300	10000	10000	21000	20800	107	105	70-130	1	8	
Zinc	ug/L	3070	1000	1000	3980	3890	91	82	70-130	2	11	

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QUALITY CONTROL DATA

Project: 517 INJECTION TREATABILITY STU

Pace Project No.: 60145193

QC Batch:	MPRP/22817	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Dissolved
Associated Lab Samples:	60145193001, 60145193003, 60145193004		

METHOD BLANK: 1195095 Matrix: Water

Associated Lab Samples: 60145193001, 60145193003, 60145193004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	05/30/13 11:42	
Calcium, Dissolved	ug/L	ND	100	05/30/13 11:42	
Iron, Dissolved	ug/L	ND	50.0	05/30/13 11:42	
Lithium, Dissolved	ug/L	ND	10.0	05/30/13 11:42	
Magnesium, Dissolved	ug/L	ND	50.0	05/30/13 11:42	
Potassium, Dissolved	ug/L	ND	500	05/30/13 11:42	
Sodium, Dissolved	ug/L	ND	500	05/30/13 11:42	
Zinc, Dissolved	ug/L	ND	50.0	05/30/13 11:42	

LABORATORY CONTROL SAMPLE: 1195096

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	10300	103	85-115	
Calcium, Dissolved	ug/L	10000	10000	100	85-115	
Iron, Dissolved	ug/L	10000	9690	97	85-115	
Lithium, Dissolved	ug/L	1000	1040	104	85-115	
Magnesium, Dissolved	ug/L	10000	9900	99	85-115	
Potassium, Dissolved	ug/L	10000	10400	104	85-115	
Sodium, Dissolved	ug/L	10000	10600	106	85-115	
Zinc, Dissolved	ug/L	1000	1040	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1195097 1195098

Parameter	Units	60145193001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	47.9J	10000	10000	10400	10500	103	104	70-130	1	8	
Calcium, Dissolved	ug/L	294000	10000	10000	295000	299000	4	45	70-130	1	9 M1	
Iron, Dissolved	ug/L	ND	10000	10000	9260	9300	93	93	70-130	0	10	
Lithium, Dissolved	ug/L	34.2	1000	1000	1100	1090	106	105	70-130	1	20	
Magnesium, Dissolved	ug/L	22800	10000	10000	31800	32400	90	96	70-130	2	9	
Potassium, Dissolved	ug/L	55800	10000	10000	65500	65300	97	95	70-130	0	7	
Sodium, Dissolved	ug/L	10700	10000	10000	21400	21300	107	106	70-130	0	8	
Zinc, Dissolved	ug/L	2800	1000	1000	3620	3520	83	72	70-130	3	11	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 517 INJECTION TREATABILITY STU

Pace Project No.: 60145193

QC Batch: MPRP/22815 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60145193001, 60145193003, 60145193004

METHOD BLANK: 1195087 Matrix: Water

Associated Lab Samples: 60145193001, 60145193003, 60145193004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	05/29/13 15:08	
Cadmium	ug/L	ND	0.50	05/29/13 15:08	
Chromium	ug/L	0.088J	1.0	05/29/13 15:08	
Cobalt	ug/L	0.11J	1.0	05/29/13 15:08	
Copper	ug/L	0.18J	1.0	05/29/13 15:08	
Lead	ug/L	0.23J	1.0	05/29/13 15:08	
Manganese	ug/L	ND	1.0	05/29/13 15:08	
Nickel	ug/L	0.35J	1.0	05/29/13 15:08	
Selenium	ug/L	ND	1.0	05/29/13 15:08	

LABORATORY CONTROL SAMPLE: 1195088

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	41.9	105	85-115	
Cadmium	ug/L	40	42.1	105	85-115	
Chromium	ug/L	40	42.3	106	85-115	
Cobalt	ug/L	40	40.9	102	85-115	
Copper	ug/L	40	41.9	105	85-115	
Lead	ug/L	40	42.2	105	85-115	
Manganese	ug/L	40	42.3	106	85-115	
Nickel	ug/L	40	41.5	104	85-115	
Selenium	ug/L	40	42.6	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1195089 1195090

Parameter	Units	60145193001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	0.92J	40	40	44.2	44.2	108	108	70-130	0	20	
Cadmium	ug/L	12.6	40	40	53.5	53.5	102	102	70-130	0	20	
Chromium	ug/L	0.73J	40	40	41.9	41.9	103	103	70-130	0	20	
Cobalt	ug/L	1.5	40	40	41.0	40.5	99	98	70-130	1	20	
Copper	ug/L	70.9	40	40	110	108	98	93	70-130	2	20	
Lead	ug/L	10.7	40	40	55.2	53.1	111	106	70-130	4	20	
Manganese	ug/L	1580	40	40	1650	1620	188	100	70-130	2	20 M1	
Nickel	ug/L	4.2	40	40	42.5	42.3	96	95	70-130	1	20	
Selenium	ug/L	ND	40	40	42.6	43.7	106	109	70-130	3	20	

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QUALITY CONTROL DATA

Project: 517 INJECTION TREATABILITY STU

Pace Project No.: 60145193

QC Batch: MPRP/22816 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60145193001, 60145193003, 60145193004

METHOD BLANK: 1195091 Matrix: Water

Associated Lab Samples: 60145193001, 60145193003, 60145193004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	05/29/13 13:55	
Cadmium, Dissolved	ug/L	ND	0.50	05/29/13 13:55	
Chromium, Dissolved	ug/L	0.30J	1.0	05/29/13 13:55	
Cobalt, Dissolved	ug/L	0.11J	1.0	05/29/13 13:55	
Copper, Dissolved	ug/L	0.64J	1.0	05/30/13 12:29	
Lead, Dissolved	ug/L	0.25J	1.0	05/29/13 13:55	
Manganese, Dissolved	ug/L	0.14J	1.0	05/29/13 13:55	
Nickel, Dissolved	ug/L	0.10J	1.0	05/29/13 13:55	
Selenium, Dissolved	ug/L	ND	1.0	05/29/13 13:55	

LABORATORY CONTROL SAMPLE: 1195092

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	41.0	102	85-115	
Cadmium, Dissolved	ug/L	40	40.9	102	85-115	
Chromium, Dissolved	ug/L	40	40.7	102	85-115	
Cobalt, Dissolved	ug/L	40	40.2	100	85-115	
Copper, Dissolved	ug/L	40	40.0	100	85-115	
Lead, Dissolved	ug/L	40	40.9	102	85-115	
Manganese, Dissolved	ug/L	40	41.3	103	85-115	
Nickel, Dissolved	ug/L	40	40.9	102	85-115	
Selenium, Dissolved	ug/L	40	41.2	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1195093 1195094

Parameter	Units	60145193002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	0.12J	40	40	42.5	43.4	106	108	70-130	2	20	
Cadmium, Dissolved	ug/L	11.0	40	40	50.4	51.7	98	102	70-130	3	20	
Chromium, Dissolved	ug/L	0.74J	40	40	40.2	41.0	99	101	70-130	2	20	
Cobalt, Dissolved	ug/L	1.3	40	40	39.1	39.7	95	96	70-130	1	20	
Copper, Dissolved	ug/L	12.1	40	40	49.1	49.3	92	93	70-130	0	20	
Lead, Dissolved	ug/L	0.32J	40	40	41.3	41.9	102	104	70-130	2	20	
Manganese, Dissolved	ug/L	1380	40	40	1400	1450	60	165	70-130	3	20 M1	
Nickel, Dissolved	ug/L	4.1	40	40	41.9	42.3	95	96	70-130	1	20	
Selenium, Dissolved	ug/L	ND	40	40	43.1	41.8	108	104	70-130	3	20	

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QUALITY CONTROL DATA

Project: 517 INJECTION TREATABILITY STU

Pace Project No.: 60145193

QC Batch: WET/41535 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60145193001, 60145193003, 60145193004

METHOD BLANK: 1195282 Matrix: Water

Associated Lab Samples: 60145193001, 60145193003, 60145193004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	05/29/13 08:06	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	05/29/13 08:06	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	05/29/13 08:06	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	05/29/13 08:06	

LABORATORY CONTROL SAMPLE: 1195283

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	464	93	90-110	

SAMPLE DUPLICATE: 1195286

Parameter	Units	60145188003 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	ND	ND		10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	ND		10	

SAMPLE DUPLICATE: 1195288

Parameter	Units	60145188004 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	388	398	3	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	388	398	3	10	

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QUALITY CONTROL DATA

Project: 517 INJECTION TREATABILITY STU

Pace Project No.: 60145193

QC Batch: WETA/24966 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60145193001, 60145193003, 60145193004

METHOD BLANK: 1198588 Matrix: Water

Associated Lab Samples: 60145193001, 60145193003, 60145193004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	06/04/13 13:44	
Chloride	mg/L	ND	1.0	06/04/13 13:44	
Fluoride	mg/L	ND	0.20	06/04/13 13:44	
Sulfate	mg/L	ND	1.0	06/04/13 13:44	

LABORATORY CONTROL SAMPLE: 1198589

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.9	99	90-110	
Chloride	mg/L	5	4.9	98	90-110	
Fluoride	mg/L	2.5	2.5	98	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1198590 1198591

Parameter	Units	60145188003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	ND	500	500	467	482	84	87	75-119	3	10	
Chloride	mg/L	1120	500	500	1560	1910	88	157	64-118	20	12	M1, R1
Fluoride	mg/L	21.4	250	250	239	253	87	93	75-110	6	10	
Sulfate	mg/L	13400	10000	10000	23100	23100	97	96	61-119	0	10	

MATRIX SPIKE SAMPLE: 1198592

Parameter	Units	60145193004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	0.57J	5	5.3	96	75-119	
Chloride	mg/L	0.96J	5	5.5	91	64-118	
Fluoride	mg/L	1.6	2.5	4.1	103	75-110	
Sulfate	mg/L	707	500	1150	88	61-119	

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QUALIFIERS

Project: 517 INJECTION TREATABILITY STU

Pace Project No.: 60145193

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

R1 RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 517 INJECTION TREATABILITY STU

Pace Project No.: 60145193

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60145193001	517SHAFT463130516	EPA 200.7	MPRP/22814	EPA 200.7	ICP/18061
60145193003	517SHAFT500130517	EPA 200.7	MPRP/22814	EPA 200.7	ICP/18061
60145193004	517SHAFT520130517	EPA 200.7	MPRP/22814	EPA 200.7	ICP/18061
60145193001	517SHAFT463130516	EPA 200.7	MPRP/22817	EPA 200.7	ICP/18062
60145193003	517SHAFT500130517	EPA 200.7	MPRP/22817	EPA 200.7	ICP/18062
60145193004	517SHAFT520130517	EPA 200.7	MPRP/22817	EPA 200.7	ICP/18062
60145193001	517SHAFT463130516	EPA 200.8	MPRP/22815	EPA 200.8	ICPM/2289
60145193003	517SHAFT500130517	EPA 200.8	MPRP/22815	EPA 200.8	ICPM/2289
60145193004	517SHAFT520130517	EPA 200.8	MPRP/22815	EPA 200.8	ICPM/2289
60145193001	517SHAFT463130516	EPA 200.8	MPRP/22816	EPA 200.8	ICPM/2290
60145193003	517SHAFT500130517	EPA 200.8	MPRP/22816	EPA 200.8	ICPM/2290
60145193004	517SHAFT520130517	EPA 200.8	MPRP/22816	EPA 200.8	ICPM/2290
60145193001	517SHAFT463130516	EPA 245.1	MERP/7379	EPA 245.1	MERC/7336
60145193003	517SHAFT500130517	EPA 245.1	MERP/7379	EPA 245.1	MERC/7336
60145193004	517SHAFT520130517	EPA 245.1	MERP/7379	EPA 245.1	MERC/7336
60145193001	517SHAFT463130516	EPA 245.1	MERP/7377	EPA 245.1	MERC/7333
60145193003	517SHAFT500130517	EPA 245.1	MERP/7377	EPA 245.1	MERC/7333
60145193004	517SHAFT520130517	EPA 245.1	MERP/7377	EPA 245.1	MERC/7333
60145193001	517SHAFT463130516	SM 2320B	WET/41535		
60145193003	517SHAFT500130517	SM 2320B	WET/41535		
60145193004	517SHAFT520130517	SM 2320B	WET/41535		
60145193001	517SHAFT463130516	EPA 300.0	WETA/24966		
60145193003	517SHAFT500130517	EPA 300.0	WETA/24966		
60145193004	517SHAFT520130517	EPA 300.0	WETA/24966		

REPORT OF LABORATORY ANALYSIS

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WO#: 60145193/



60145193

60145199



Sample Condition Upon Receipt ESI Tech Spec Client

Client Name: BP AMEC

Optional

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Proj Due Date:

Tracking #: 1Z 733 W87 22 1005 6332 Pace Shipping Label Used? Yes ☐ No ☒

Proj Name:

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☒ 2716Thermometer Used: T-112 / T-194Type of Ice: Wet Blue ☐ None ☐ Samples received on ice, cooling process has begun.
(circle one)Cooler Temperature: 5.0Date and initials of person examining contents: PUG-22-13

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7. <u>Rush</u>
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses Matrix: <u>WT</u>		13.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:

Client Notification/ Resolution:

Copy COC to Client? Y / N

Field Data Required? Y / N

Person Contacted: Lynda Comardi Date/Time: 5/21/13Comments/ Resolution: Per Lynda - 5 day TAT on RushSample - Split rush sample from others. Sample may be high for metals. Arrw 5/22/13Project Manager Review: edmwDate: 5/22/13

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: 1223 Start:End: 1225 End:

Temp: Temp:



Laboratory Management Program LAMP Chain of Custody Record

Page 1 of 1BP/ARC Project Name: Rico-Argentine Mine Site

Req Due Date (mm/dd/yy): _____

Rush TAT: Yes ☐ No ☒

BP/ARC Facility No: _____

Lab Work Order Number: _____

60145193/60145199

Lab Name: Pace Analytical Laboratories, Inc.				BP/ARC Facility Address: Rico-Argentine Mine				Consultant/Contractor: AMEC E&I, Inc.														
Lab Address: 9608 Loiret Blvd., Lenexa, KS 66219				City, State, ZIP Code: Rico, Colorado				Consultant/Contractor Project No: SA11161313														
Lab PM: Heather Wilson				Lead Regulatory Agency: U.S. EPA Region 8				Address: 10670 White Rock Road, Suite 100, Rancho Cordova, CA														
Lab Phone: (913) 563-1407				California Global ID No.: NA				Consultant/Contractor PM: Marc Lombardi														
Lab Shipping Acct: UPS # 733W87				Enfos Proposal No: D00LL-0006 WR 261586				Phone: 916-636-3200														
Lab Bottle Order No: NA				Accounting Mode: Provision <input checked="" type="checkbox"/> OOC-BU <input type="checkbox"/> OOC-RM <input type="checkbox"/>				Email Report/EDD To: lynda.lombardi@amec.com														
Other Info: 517 Injection Treatability Study				Stage: 4-Execute Activity: Spend				Invoice To: BP/ARC <input checked="" type="checkbox"/> Contractor <input type="checkbox"/>														
BP/ARC EBM: Anthony Brown				Matrix		No. Containers / Preservative		Requested Analyses						Report Type & QC Level								
EBM Phone: 714-228-6770														Standard <input checked="" type="checkbox"/>								
EBM Email: anthony.brown@bp.com														Full Data Package <input type="checkbox"/>								
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Methanol	Tot Metals-see notes (E200.7/200.8/E245.1)	Dis Metals-see notes (E200.7/200.8/E245.1)	Alkalinity-Total, HCO ₃ , CO ₃ , OH (SM2320B)	Bromide (E300.0)	Chloride (E300.0)	Fluoride (E300.0)	Sulfate (E300.0)	RUSH TAT*	Comments	
	517 Shaft 463130516 IBP2U	5/16/2013	12:10	X			3	1	0	2	0	0	X	X	X	X	X	X	X	X	IBP3 F-15	Dissolved metals samples are field filtered
	517 Shaft 475130516	5/16/13	12:50	X			3	1	0	2	0	0	X	X	X	X	X	X	X	X		
	517 Shaft 500130517	5/17/13	11:46	X			3	1	0	2	0	0	X	X	X	X	X	X	X	X		Metals are: Al, Ca, Fe, K, Li, Na, Mg, Zn
	517 Shaft 520130517	5/17/13	13:55	X			3	1	0	2	0	0	X	X	X	X	X	X	X	X		(E200.7); As, Cd, Co, Cr, Cu, Mn, Ni, Pb, Se (E200.8); and Hg (E245.1)
* Rush turn-around time																						
Sampler's Name: <u>Hallie Belan Simpson</u>				Relinquished By / Affiliation: <u>Hallie Belan Simpson / AMEC</u>				Date: <u>5/21/13</u>	Time: <u>13:00</u>	Accepted By / Affiliation: <u>PA5I</u>				Date: <u>5/22</u>	Time: <u>1030</u>							
Sampler's Company: <u>AMEC</u>																						
Shipment Method: <u>UPS</u> Ship Date: <u>5/21/2013</u>																						
Shipment Tracking No: <u>1Z 733 W87 22 1005 6332</u>																						
Special Instructions:																						
THIS LINE - LAB USE ONLY: Custody Seals In Place: <input checked="" type="checkbox"/> No Temp Blank: <input checked="" type="checkbox"/> No Cooler Temp on Receipt: <u>5.0</u> °F/C Trip Blank: Yes / <input checked="" type="checkbox"/> No MS/MSD Sample Submitted: Yes / <input checked="" type="checkbox"/>																						

May 30, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: 517 Injection Treatability
Pace Project No.: 60145199

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on May 22, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 517 Injection Treatability

Pace Project No.: 60145199

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

A2LA Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 517 Injection Treatability

Pace Project No.: 60145199

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60145193002	517SHAFT475130516	Water	05/16/13 12:50	05/22/13 10:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 517 Injection Treatability

Pace Project No.: 60145199

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60145193002	517SHAFT475130516	EPA 200.7	NDJ	8
		EPA 200.7	NDJ	8
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	TJT	1
		EPA 245.1	TJT	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 517 Injection Treatability

Pace Project No.: 60145199

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: May 30, 2013

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/22814

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60145193002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1195085)
 - Calcium
- MSD (Lab ID: 1195086)
 - Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 517 Injection Treatability

Pace Project No.: 60145199

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: May 30, 2013

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/22817

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60145193001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1195097)
 - Calcium, Dissolved
- MSD (Lab ID: 1195098)
 - Calcium, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 517 Injection Treatability

Pace Project No.: 60145199

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: May 30, 2013

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/22815

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60145193001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1195089)
- Manganese

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 517 Injection Treatability

Pace Project No.: 60145199

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: May 30, 2013

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/22816

B: Analyte was detected in the associated method blank.

- BLANK for HBN 292479 [MPRP/228 (Lab ID: 1195091)
 - Chromium, Dissolved
 - Lead, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/22816

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60145193002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1195093)
 - Manganese, Dissolved
- MSD (Lab ID: 1195094)
 - Manganese, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 517 Injection Treatability

Pace Project No.: 60145199

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: May 30, 2013

General Information:

1 sample was analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 517 Injection Treatability

Pace Project No.: 60145199

Method: EPA 245.1

Description: 245.1 Mercury, Dissolved

Client: BP AMEC

Date: May 30, 2013

General Information:

1 sample was analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 517 Injection Treatability

Pace Project No.: 60145199

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: May 30, 2013

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 517 Injection Treatability

Pace Project No.: 60145199

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: May 30, 2013

General Information:

1 sample was analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 517 Injection Treatability

Pace Project No.: 60145199

Sample: 517SHAFT475130516 Lab ID: 60145193002 Collected: 05/16/13 12:50 Received: 05/22/13 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	542	ug/L	75.0	16.6	1	05/28/13 09:52	05/30/13 12:25	7429-90-5	M1
Calcium	285000	ug/L	100	10.4	1	05/28/13 09:52	05/30/13 12:25	7440-70-2	
Iron	4740	ug/L	50.0	11.6	1	05/28/13 09:52	05/30/13 12:25	7439-89-6	
Lithium	35.5	ug/L	10.0	2.4	1	05/28/13 09:52	05/30/13 12:25	7439-93-2	
Magnesium	22000	ug/L	50.0	6.5	1	05/28/13 09:52	05/30/13 12:25	7439-95-4	
Potassium	54100	ug/L	500	44.4	1	05/28/13 09:52	05/30/13 12:25	7440-09-7	
Sodium	10300	ug/L	500	21.7	1	05/28/13 09:52	05/30/13 12:25	7440-23-5	
Zinc	3070	ug/L	50.0	3.3	1	05/28/13 09:52	05/30/13 12:25	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	58.5J	ug/L	75.0	16.6	1	05/28/13 10:22	05/30/13 11:46	7429-90-5	D9
Calcium, Dissolved	294000	ug/L	100	10.4	1	05/28/13 10:22	05/30/13 11:46	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	11.6	1	05/28/13 10:22	05/30/13 11:46	7439-89-6	
Lithium, Dissolved	34.0	ug/L	10.0	2.4	1	05/28/13 10:22	05/30/13 11:46	7439-93-2	
Magnesium, Dissolved	22800	ug/L	50.0	6.5	1	05/28/13 10:22	05/30/13 11:46	7439-95-4	D9
Potassium, Dissolved	54900	ug/L	500	44.4	1	05/28/13 10:22	05/30/13 11:46	7440-09-7	D9
Sodium, Dissolved	10600	ug/L	500	21.7	1	05/28/13 10:22	05/30/13 11:46	7440-23-5	D9
Zinc, Dissolved	2770	ug/L	50.0	3.3	1	05/28/13 10:22	05/30/13 11:46	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.9	ug/L	1.0	0.050	1	05/28/13 09:56	05/29/13 15:17	7440-38-2	
Cadmium	13.8	ug/L	0.50	0.050	1	05/28/13 09:56	05/29/13 15:17	7440-43-9	
Chromium	1.0	ug/L	1.0	0.070	1	05/28/13 09:56	05/29/13 15:17	7440-47-3	
Cobalt	1.8	ug/L	1.0	0.080	1	05/28/13 09:56	05/29/13 15:17	7440-48-4	
Copper	129	ug/L	1.0	0.12	1	05/28/13 09:56	05/29/13 15:17	7440-50-8	
Lead	22.6	ug/L	1.0	0.030	1	05/28/13 09:56	05/29/13 15:17	7439-92-1	
Manganese	1820	ug/L	1.0	0.14	1	05/28/13 09:56	05/29/13 15:17	7439-96-5	
Nickel	4.4	ug/L	1.0	0.070	1	05/28/13 09:56	05/29/13 15:17	7440-02-0	
Selenium	ND	ug/L	1.0	0.14	1	05/28/13 09:56	05/29/13 15:17	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.12J	ug/L	1.0	0.050	1	05/28/13 10:22	05/29/13 14:07	7440-38-2	
Cadmium, Dissolved	11.0	ug/L	0.50	0.050	1	05/28/13 10:22	05/29/13 14:07	7440-43-9	
Chromium, Dissolved	0.74J	ug/L	1.0	0.070	1	05/28/13 10:22	05/29/13 14:07	7440-47-3	B
Cobalt, Dissolved	1.3	ug/L	1.0	0.080	1	05/28/13 10:22	05/29/13 14:07	7440-48-4	
Copper, Dissolved	12.1	ug/L	1.0	0.12	1	05/28/13 10:22	05/29/13 14:07	7440-50-8	
Lead, Dissolved	0.32J	ug/L	1.0	0.030	1	05/28/13 10:22	05/29/13 14:07	7439-92-1	B
Manganese, Dissolved	1380	ug/L	1.0	0.14	1	05/28/13 10:22	05/29/13 14:07	7439-96-5	M1
Nickel, Dissolved	4.1	ug/L	1.0	0.070	1	05/28/13 10:22	05/29/13 14:07	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	05/28/13 10:22	05/29/13 14:07	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	05/24/13 15:25	05/27/13 15:55	7439-97-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 517 Injection Treatability

Pace Project No.: 60145199

Sample: 517SHAFT475130516 Lab ID: 60145193002 Collected: 05/16/13 12:50 Received: 05/22/13 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	05/24/13 11:05	05/27/13 11:45	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	208	mg/L	20.0	1.2	1		05/24/13 13:44		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		05/24/13 13:44		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		05/24/13 13:44		
Alkalinity, Total as CaCO ₃	208	mg/L	20.0	1.2	1		05/24/13 13:44		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	ND	mg/L	1.0	0.18	1		05/26/13 14:31	24959-67-9	
Chloride	1.0	mg/L	1.0	0.035	1		05/26/13 14:31	16887-00-6	
Fluoride	1.6	mg/L	0.20	0.022	1		05/26/13 14:31	16984-48-8	
Sulfate	666	mg/L	100	10.0	100		05/26/13 13:42	14808-79-8	

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QUALITY CONTROL DATA

Project: 517 Injection Treatability

Pace Project No.: 60145199

QC Batch: MERP/7379

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury

Associated Lab Samples: 60145193002

METHOD BLANK: 1193937

Matrix: Water

Associated Lab Samples: 60145193002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	05/27/13 15:48	

LABORATORY CONTROL SAMPLE: 1193938

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.5	90	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1193939 1193940

Parameter	Units	60145193002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.2	4.4	85	87	70-130	3	20	

MATRIX SPIKE SAMPLE: 1193941

Parameter	Units	60145296004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	ND	5	4.2	81	70-130	

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QUALITY CONTROL DATA

Project: 517 Injection Treatability

Pace Project No.: 60145199

QC Batch: MERP/7377

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury - Dissolved

Associated Lab Samples: 60145193002

METHOD BLANK: 1193553

Matrix: Water

Associated Lab Samples: 60145193002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	05/27/13 11:40	

LABORATORY CONTROL SAMPLE: 1193554

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	4.4	87	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1193555 1193556

Parameter	Units	60145193002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury, Dissolved	ug/L	ND	5	5	4.4	4.1	88	82	70-130	7	20	

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QUALITY CONTROL DATA

Project: 517 Injection Treatability

Pace Project No.: 60145199

QC Batch: MPRP/22814

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60145193002

METHOD BLANK: 1195083

Matrix: Water

Associated Lab Samples: 60145193002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	05/30/13 12:22	
Calcium	ug/L	ND	100	05/30/13 12:22	
Iron	ug/L	ND	50.0	05/30/13 12:22	
Lithium	ug/L	ND	10.0	05/30/13 12:22	
Magnesium	ug/L	ND	50.0	05/30/13 12:22	
Potassium	ug/L	ND	500	05/30/13 12:22	
Sodium	ug/L	ND	500	05/30/13 12:22	
Zinc	ug/L	ND	50.0	05/30/13 12:22	

LABORATORY CONTROL SAMPLE: 1195084

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	10200	102	85-115	
Calcium	ug/L	10000	9740	97	85-115	
Iron	ug/L	10000	9280	93	85-115	
Lithium	ug/L	1000	1030	103	85-115	
Magnesium	ug/L	10000	9530	95	85-115	
Potassium	ug/L	10000	10200	102	85-115	
Sodium	ug/L	10000	10400	104	85-115	
Zinc	ug/L	1000	1000	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1195085

1195086

Parameter	Units	60145193002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	542	10000	10000	10700	10600	102	101	70-130	1	8	
Calcium	ug/L	285000	10000	10000	290000	288000	53	25	70-130	1	9 M1	
Iron	ug/L	4740	10000	10000	13800	13800	90	91	70-130	0	10	
Lithium	ug/L	35.5	1000	1000	1100	1100	106	107	70-130	0	20	
Magnesium	ug/L	22000	10000	10000	31100	30900	90	88	70-130	1	9	
Potassium	ug/L	54100	10000	10000	64500	64400	105	103	70-130	0	7	
Sodium	ug/L	10300	10000	10000	21000	20800	107	105	70-130	1	8	
Zinc	ug/L	3070	1000	1000	3980	3890	91	82	70-130	2	11	

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QUALITY CONTROL DATA

Project: 517 Injection Treatability

Pace Project No.: 60145199

QC Batch: MPRP/22817

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60145193002

METHOD BLANK: 1195095

Matrix: Water

Associated Lab Samples: 60145193002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	05/30/13 11:42	
Calcium, Dissolved	ug/L	ND	100	05/30/13 11:42	
Iron, Dissolved	ug/L	ND	50.0	05/30/13 11:42	
Lithium, Dissolved	ug/L	ND	10.0	05/30/13 11:42	
Magnesium, Dissolved	ug/L	ND	50.0	05/30/13 11:42	
Potassium, Dissolved	ug/L	ND	500	05/30/13 11:42	
Sodium, Dissolved	ug/L	ND	500	05/30/13 11:42	
Zinc, Dissolved	ug/L	ND	50.0	05/30/13 11:42	

LABORATORY CONTROL SAMPLE: 1195096

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	10300	103	85-115	
Calcium, Dissolved	ug/L	10000	10000	100	85-115	
Iron, Dissolved	ug/L	10000	9690	97	85-115	
Lithium, Dissolved	ug/L	1000	1040	104	85-115	
Magnesium, Dissolved	ug/L	10000	9900	99	85-115	
Potassium, Dissolved	ug/L	10000	10400	104	85-115	
Sodium, Dissolved	ug/L	10000	10600	106	85-115	
Zinc, Dissolved	ug/L	1000	1040	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1195097

1195098

Parameter	Units	60145193001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	47.9J	10000	10000	10400	10500	103	104	70-130	1	8	
Calcium, Dissolved	ug/L	294000	10000	10000	295000	299000	4	45	70-130	1	9 M1	
Iron, Dissolved	ug/L	ND	10000	10000	9260	9300	93	93	70-130	0	10	
Lithium, Dissolved	ug/L	34.2	1000	1000	1100	1090	106	105	70-130	1	20	
Magnesium, Dissolved	ug/L	22800	10000	10000	31800	32400	90	96	70-130	2	9	
Potassium, Dissolved	ug/L	55800	10000	10000	65500	65300	97	95	70-130	0	7	
Sodium, Dissolved	ug/L	10700	10000	10000	21400	21300	107	106	70-130	0	8	
Zinc, Dissolved	ug/L	2800	1000	1000	3620	3520	83	72	70-130	3	11	

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QUALITY CONTROL DATA

Project: 517 Injection Treatability
Pace Project No.: 60145199

QC Batch: MPRP/22815 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60145193002

METHOD BLANK: 1195087 Matrix: Water
Associated Lab Samples: 60145193002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	05/29/13 15:08	
Cadmium	ug/L	ND	0.50	05/29/13 15:08	
Chromium	ug/L	0.088J	1.0	05/29/13 15:08	
Cobalt	ug/L	0.11J	1.0	05/29/13 15:08	
Copper	ug/L	0.18J	1.0	05/29/13 15:08	
Lead	ug/L	0.23J	1.0	05/29/13 15:08	
Manganese	ug/L	ND	1.0	05/29/13 15:08	
Nickel	ug/L	0.35J	1.0	05/29/13 15:08	
Selenium	ug/L	ND	1.0	05/29/13 15:08	

LABORATORY CONTROL SAMPLE: 1195088

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	41.9	105	85-115	
Cadmium	ug/L	40	42.1	105	85-115	
Chromium	ug/L	40	42.3	106	85-115	
Cobalt	ug/L	40	40.9	102	85-115	
Copper	ug/L	40	41.9	105	85-115	
Lead	ug/L	40	42.2	105	85-115	
Manganese	ug/L	40	42.3	106	85-115	
Nickel	ug/L	40	41.5	104	85-115	
Selenium	ug/L	40	42.6	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1195089 1195090

Parameter	Units	60145193001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	0.92J	40	40	44.2	44.2	108	108	70-130	0	20	
Cadmium	ug/L	12.6	40	40	53.5	53.5	102	102	70-130	0	20	
Chromium	ug/L	0.73J	40	40	41.9	41.9	103	103	70-130	0	20	
Cobalt	ug/L	1.5	40	40	41.0	40.5	99	98	70-130	1	20	
Copper	ug/L	70.9	40	40	110	108	98	93	70-130	2	20	
Lead	ug/L	10.7	40	40	55.2	53.1	111	106	70-130	4	20	
Manganese	ug/L	1580	40	40	1650	1620	188	100	70-130	2	20 M1	
Nickel	ug/L	4.2	40	40	42.5	42.3	96	95	70-130	1	20	
Selenium	ug/L	ND	40	40	42.6	43.7	106	109	70-130	3	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 517 Injection Treatability
Pace Project No.: 60145199

QC Batch: MPRP/22816 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60145193002

METHOD BLANK: 1195091 Matrix: Water
Associated Lab Samples: 60145193002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	05/29/13 13:55	
Cadmium, Dissolved	ug/L	ND	0.50	05/29/13 13:55	
Chromium, Dissolved	ug/L	0.30J	1.0	05/29/13 13:55	
Cobalt, Dissolved	ug/L	0.11J	1.0	05/29/13 13:55	
Copper, Dissolved	ug/L	0.64J	1.0	05/30/13 12:29	
Lead, Dissolved	ug/L	0.25J	1.0	05/29/13 13:55	
Manganese, Dissolved	ug/L	0.14J	1.0	05/29/13 13:55	
Nickel, Dissolved	ug/L	0.10J	1.0	05/29/13 13:55	
Selenium, Dissolved	ug/L	ND	1.0	05/29/13 13:55	

LABORATORY CONTROL SAMPLE: 1195092

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	41.0	102	85-115	
Cadmium, Dissolved	ug/L	40	40.9	102	85-115	
Chromium, Dissolved	ug/L	40	40.7	102	85-115	
Cobalt, Dissolved	ug/L	40	40.2	100	85-115	
Copper, Dissolved	ug/L	40	40.0	100	85-115	
Lead, Dissolved	ug/L	40	40.9	102	85-115	
Manganese, Dissolved	ug/L	40	41.3	103	85-115	
Nickel, Dissolved	ug/L	40	40.9	102	85-115	
Selenium, Dissolved	ug/L	40	41.2	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1195093 1195094

Parameter	Units	60145193002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	0.12J	40	40	42.5	43.4	106	108	70-130	2	20	
Cadmium, Dissolved	ug/L	11.0	40	40	50.4	51.7	98	102	70-130	3	20	
Chromium, Dissolved	ug/L	0.74J	40	40	40.2	41.0	99	101	70-130	2	20	
Cobalt, Dissolved	ug/L	1.3	40	40	39.1	39.7	95	96	70-130	1	20	
Copper, Dissolved	ug/L	12.1	40	40	49.1	49.3	92	93	70-130	0	20	
Lead, Dissolved	ug/L	0.32J	40	40	41.3	41.9	102	104	70-130	2	20	
Manganese, Dissolved	ug/L	1380	40	40	1400	1450	60	165	70-130	3	20 M1	
Nickel, Dissolved	ug/L	4.1	40	40	41.9	42.3	95	96	70-130	1	20	
Selenium, Dissolved	ug/L	ND	40	40	43.1	41.8	108	104	70-130	3	20	

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QUALITY CONTROL DATA

Project: 517 Injection Treatability

Pace Project No.: 60145199

QC Batch: WET/41474

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60145193002

METHOD BLANK: 1193391

Matrix: Water

Associated Lab Samples: 60145193002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	05/24/13 12:57	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	05/24/13 12:57	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	05/24/13 12:57	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	05/24/13 12:57	

LABORATORY CONTROL SAMPLE: 1193392

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	504	101	90-110	

SAMPLE DUPLICATE: 1193395

Parameter	Units	60145100002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	6.0J		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	349	350	0	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	335	344	3	10	

SAMPLE DUPLICATE: 1193397

Parameter	Units	60144745010 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	223	224	1	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	223	224	1	10	

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QUALITY CONTROL DATA

Project: 517 Injection Treatability

Pace Project No.: 60145199

QC Batch:	WETA/24857	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
Associated Lab Samples:	60145193002		

METHOD BLANK: 1194863 Matrix: Water

Associated Lab Samples: 60145193002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	05/26/13 12:20	
Chloride	mg/L	ND	1.0	05/26/13 12:20	
Fluoride	mg/L	ND	0.20	05/26/13 12:20	
Sulfate	mg/L	ND	1.0	05/26/13 12:20	

LABORATORY CONTROL SAMPLE: 1194864

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.0	101	90-110	
Chloride	mg/L	5	5.0	100	90-110	
Fluoride	mg/L	2.5	2.5	100	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1194566 1194567

Parameter	Units	60144894006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	ND	500	500	455	447	87	85	75-119	2	10	
Chloride	mg/L	830	500	500	1260	1260	85	85	64-118	0	12	
Fluoride	mg/L	ND	250	250	216	215	86	86	75-110	1	10	
Sulfate	mg/L	2410	1000	1000	3320	3370	91	96	61-119	2	10	

MATRIX SPIKE SAMPLE: 1194568

Parameter	Units	60144668001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	50	46.6	90	75-119	
Chloride	mg/L	41.5	50	84.3	86	64-118	
Fluoride	mg/L	ND	25	22.7	88	75-110	
Sulfate	mg/L	116	50	158	83	61-119	

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 517 Injection Treatability

Pace Project No.: 60145199

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 517 Injection Treatability

Pace Project No.: 60145199

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60145193002	517SHAFT475130516	EPA 200.7	MPRP/22814	EPA 200.7	ICP/18061
60145193002	517SHAFT475130516	EPA 200.7	MPRP/22817	EPA 200.7	ICP/18062
60145193002	517SHAFT475130516	EPA 200.8	MPRP/22815	EPA 200.8	ICPM/2289
60145193002	517SHAFT475130516	EPA 200.8	MPRP/22816	EPA 200.8	ICPM/2290
60145193002	517SHAFT475130516	EPA 245.1	MERP/7379	EPA 245.1	MERC/7336
60145193002	517SHAFT475130516	EPA 245.1	MERP/7377	EPA 245.1	MERC/7333
60145193002	517SHAFT475130516	SM 2320B	WET/41474		
60145193002	517SHAFT475130516	EPA 300.0	WETA/24857		

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Sample Condition Upon Receipt
ESI Tech Spec Client

WO#: 60145193



60145193

60145199

Client Name: BP AMEC

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 1Z 733 W87 22 1005 6332 Pace Shipping Label Used? Yes ☐ No ☒

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☒ 2PIL

Thermometer Used: T-112 / T-194

Type of Ice: Wet Blue ☐ None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 5.0

Temperature should be above freezing to 6°C

Date and initials of person examining contents: PUG-22-13

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7. <u>Rush</u>
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses	Matrix: <u>WT</u>	13.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:

Client Notification/ Resolution:

Copy COC to Client? Y / N

Field Data Required? Y / N

Person Contacted: Lynda Comardi Date/Time: 5/21/13

Comments/ Resolution: Per Lynda - 5 day TAT on Rush

Sample - Split rush sample from other's. Sample may be high for metals. Arrw 5/22/13

Project Manager Review: edmw

Date: 5/22/13

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: 1223 Start:

End: 1225 End:

Temp: Temp:



Laboratory Management Program Chain of Custody Record

Page 1 of 1BP/ARC Project Name: Rico-Argentine Mine Site

Req Due Date (mm/dd/yy): _____

Rush TAT: Yes No X

BP/ARC Facility No: _____

Lab Work Order Number: _____

60145193/60145199

Lab Name: Pace Analytical Laboratories, Inc.				BP/ARC Facility Address: Rico-Argentine Mine				Consultant/Contractor: AMEC E&I, Inc.													
Lab Address: 9608 Loiret Blvd., Lenexa, KS 66219				City, State, ZIP Code: Rico, Colorado				Consultant/Contractor Project No: SA11161313													
Lab PM: Heather Wilson				Lead Regulatory Agency: U.S. EPA Region 8				Address: 10670 White Rock Road, Suite 100, Rancho Cordova, CA													
Lab Phone: (913) 563-1407				California Global ID No.: NA				Consultant/Contractor PM: Marc Lombardi													
Lab Shipping Acct: UPS # 733W87				Enfos Proposal No: D00LL-0006 WR 261586				Phone: 916-636-3200													
Lab Bottle Order No: NA				Accounting Mode: Provision <u>X</u> OOC-BU <u> </u> OOC-RM <u> </u>				Email Report/EDD To: lynda.lombardi@amec.com													
Other Info: 517 Injection Treatability Study				Stage: 4-Execute Activity: Spend				Invoice To: BP/ARC <u>X</u> Contractor <u> </u>													
BP/ARC EBM: Anthony Brown				Matrix		No. Containers / Preservative		Requested Analyses						Report Type & QC Level							
EBM Phone: 714-228-6770														Standard <u>X</u>							
EBM Email: anthony.brown@bp.com														Full Data Package <u> </u>							
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Methanol	Tot Metals-see notes (E200.7/200.8/E245.1)	Dis Metals-see notes (E200.7/200.8/E245.1)	Alkalinity-Total, HCO ₃ , CO ₃ , OH (SM2320B)	Bromide (E300.0)	Chloride (E300.0)	Fluoride (E300.0)	Sulfate (E300.0)	Comments	
	517 Shaft 463130516 BP26	5/16/2013	12:10	X			3	1	0	2	0	0	X	X	X	X	X	X	X	X	Dissolved metals samples are field filtered
	517 Shaft 475130516	5/16/13	12:50	X			3	1	0	2	0	0	X	X	X	X	X	X	X	X	
	517 Shaft 500130517	5/17/13	11:46	X			3	1	0	2	0	0	X	X	X	X	X	X	X	X	Metals are: Al, Ca, Fe, K, Li, Na, Mg, Zn
	517 Shaft 520130517	5/17/13	13:55	X			3	1	0	2	0	0	X	X	X	X	X	X	X	X	(E200.7); As, Cd, Co, Cr, Cu, Mn, Ni, Pb, Se (E200.8); and Hg (E245.1)
* Rush turn-around time																					
Sampler's Name: <u>Hallie Belan Simpson</u>				Relinquished By / Affiliation: <u>Hallie Belan Simpson / AMEC</u>				Date: <u>5/2/13</u>		Time: <u>13:00</u>		Accepted By / Affiliation: <u>PR</u> <u>PR5I</u>				Date: <u>5/22</u>		Time: <u>1030</u>			
Sampler's Company: <u>AMEC</u>																					
Shipment Method: <u>UPS</u> Ship Date: <u>5/21/2013</u>																					
Shipment Tracking No: <u>1Z 733 W87 22 1005 6332</u>																					
Special Instructions:																					
THIS LINE - LAB USE ONLY: Custody Seals In Place: <u> </u> Yes <u>X</u> No Temp Blank: <u> </u> Yes <u>X</u> No Cooler Temp on Receipt: <u>5-0</u> °F/C Trip Blank: Yes <u> </u> No MS/MSD Sample Submitted: Yes <u> </u> No																					

July 02, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: Rico-Argentine Mine Site
Pace Project No.: 60147492

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on June 22, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Rico-Argentine Mine Site

Pace Project No.: 60147492

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Rico-Argentine Mine Site

Pace Project No.: 60147492

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60147492001	517SHAFT465130619	Water	06/19/13 10:50	06/22/13 09:20
60147492002	BLAINEOBF130619	Water	06/19/13 11:15	06/22/13 09:20
60147492003	BLAINEIBF130619	Water	06/19/13 11:20	06/22/13 09:20
60147492004	SILVERCREEK130619	Water	06/19/13 12:40	06/22/13 09:20
60147492005	DR3A130619	Water	06/19/13 14:20	06/22/13 09:20

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SAMPLE ANALYTE COUNT

Project: Rico-Argentine Mine Site

Pace Project No.: 60147492

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60147492001	517SHAFT465130619	EPA 200.7	SMW, TJT	9
		EPA 200.7	SMW	9
		EPA 200.8	JGP	9
		EPA 200.8	JGP	9
		EPA 245.1	TDS	1
		EPA 245.1	TDS	1
		SM 2320B	JMC	4
		EPA 300.0	MRT, OL	4
60147492002	BLAINEOBF130619	EPA 200.7	SMW, TJT	9
		EPA 200.7	SMW	9
		EPA 200.8	JGP	9
		EPA 200.8	JGP	9
		EPA 245.1	TDS	1
		EPA 245.1	TDS	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60147492003	BLAINEIBF130619	EPA 200.7	SMW, TJT	9
		EPA 200.7	SMW	9
		EPA 200.8	JGP	9
		EPA 200.8	JGP	9
		EPA 245.1	TDS	1
		EPA 245.1	TDS	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60147492004	SILVERCREEK130619	EPA 200.7	SMW, TJT	9
		EPA 200.7	SMW	9
		EPA 200.8	JGP	9
		EPA 200.8	JGP	9
		EPA 245.1	TDS	1
		EPA 245.1	TDS	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60147492005	DR3A130619	EPA 200.7	SMW, TJT	9
		EPA 200.7	SMW	9
		EPA 200.8	JGP	9
		EPA 200.8	JGP	9
		EPA 245.1	TDS	1

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SAMPLE ANALYTE COUNT

Project: Rico-Argentine Mine Site

Pace Project No.: 60147492

Lab ID	Sample ID	Method	Analysts	Analytes Reported
		EPA 245.1	TDS	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60147492

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: July 02, 2013

General Information:

5 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23191

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60147492001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1209813)
 - Calcium
 - Potassium
 - Sodium
- MSD (Lab ID: 1209814)
 - Calcium
 - Potassium
 - Sodium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60147492

Method: EPA 200.7
Description: 200.7 Metals, Dissolved
Client: BP AMEC
Date: July 02, 2013

General Information:

5 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23189

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60147492001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1209805)
 - Calcium, Dissolved
- MSD (Lab ID: 1209806)
 - Calcium, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60147492

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: July 02, 2013

General Information:

5 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23192

B: Analyte was detected in the associated method blank.

- BLANK for HBN 296064 [MPRP/231 (Lab ID: 1209815)]
- Nickel

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23192

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60147492002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1209817)
 - Arsenic
 - Cadmium
 - Chromium
 - Cobalt
 - Copper
 - Manganese
 - Nickel
- MSD (Lab ID: 1209818)

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60147492

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: July 02, 2013

QC Batch: MPRP/23192

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60147492002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- Arsenic
- Chromium
- Cobalt
- Copper
- Manganese
- Nickel

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60147492

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: July 02, 2013

General Information:

5 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23190

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60147492002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1209809)
 - Arsenic, Dissolved
 - Cadmium, Dissolved
 - Cobalt, Dissolved
 - Copper, Dissolved
 - Manganese, Dissolved
 - Nickel, Dissolved
- MSD (Lab ID: 1209810)
 - Arsenic, Dissolved
 - Cadmium, Dissolved
 - Chromium, Dissolved
 - Cobalt, Dissolved
 - Copper, Dissolved
 - Lead, Dissolved

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60147492

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: July 02, 2013

QC Batch: MPRP/23190

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60147492002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- Manganese, Dissolved
- Nickel, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60147492

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: July 02, 2013

General Information:

5 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MERP/7451

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60147275002,60147519001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1210077)
 - Mercury
- MSD (Lab ID: 1210078)
 - Mercury

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60147492

Method: EPA 245.1

Description: 245.1 Mercury, Dissolved

Client: BP AMEC

Date: July 02, 2013

General Information:

5 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60147492

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: July 02, 2013

General Information:

5 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60147492

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: July 02, 2013

General Information:

5 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60147492

Sample: 517SHAFT465130619 Lab ID: 60147492001 Collected: 06/19/13 10:50 Received: 06/22/13 09:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	76.4	ug/L	75.0	16.6	1	06/24/13 09:30	06/26/13 11:24	7429-90-5	
Calcium	312000	ug/L	100	10.4	1	06/24/13 09:30	06/26/13 11:24	7440-70-2	M1
Iron	719	ug/L	50.0	11.6	1	06/24/13 09:30	06/26/13 11:24	7439-89-6	
Lithium	32.8	ug/L	10.0	2.4	1	06/24/13 09:30	06/26/13 15:32	7439-93-2	
Magnesium	26300	ug/L	50.0	6.5	1	06/24/13 09:30	06/26/13 11:24	7439-95-4	
Potassium	24900	ug/L	500	44.4	1	06/24/13 09:30	07/01/13 16:59	7440-09-7	M1
Silicon	6360	ug/L	500	23.9	1	06/24/13 09:30	06/26/13 11:24	7440-21-3	
Sodium	9230	ug/L	500	21.7	1	06/24/13 09:30	07/01/13 16:59	7440-23-5	M1
Zinc	2990	ug/L	50.0	3.3	1	06/24/13 09:30	06/26/13 11:24	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	87.6	ug/L	75.0	16.6	1	06/24/13 09:30	06/25/13 12:06	7429-90-5	D9
Calcium, Dissolved	314000	ug/L	100	10.4	1	06/24/13 09:30	06/25/13 12:06	7440-70-2	D9,M1
Iron, Dissolved	11.8J	ug/L	50.0	11.6	1	06/24/13 09:30	06/26/13 12:11	7439-89-6	
Lithium, Dissolved	26.6	ug/L	10.0	2.4	1	06/24/13 09:30	06/25/13 12:06	7439-93-2	
Magnesium, Dissolved	25300	ug/L	50.0	6.5	1	06/24/13 09:30	06/25/13 12:06	7439-95-4	
Potassium, Dissolved	24100	ug/L	500	44.4	1	06/24/13 09:30	06/25/13 12:06	7440-09-7	
Silicon, Dissolved	6960	ug/L	500	23.9	1	06/24/13 09:30	06/25/13 12:06	7440-21-3	D9
Sodium, Dissolved	9300	ug/L	500	21.7	1	06/24/13 09:30	06/25/13 12:06	7440-23-5	D9
Zinc, Dissolved	2950	ug/L	50.0	3.3	1	06/24/13 09:30	06/25/13 12:06	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.13J	ug/L	1.0	0.050	1	06/24/13 09:30	06/24/13 17:20	7440-38-2	
Cadmium	9.4	ug/L	0.50	0.050	1	06/24/13 09:30	06/24/13 17:20	7440-43-9	
Chromium	0.68J	ug/L	1.0	0.070	1	06/24/13 09:30	06/24/13 17:20	7440-47-3	
Cobalt	1.0	ug/L	1.0	0.080	1	06/24/13 09:30	06/24/13 17:20	7440-48-4	
Copper	16.1	ug/L	1.0	0.12	1	06/24/13 09:30	06/24/13 17:20	7440-50-8	
Lead	6.3	ug/L	1.0	0.030	1	06/24/13 09:30	06/24/13 17:20	7439-92-1	
Manganese	1170	ug/L	1.0	0.14	1	06/24/13 09:30	06/24/13 17:20	7439-96-5	
Nickel	2.4	ug/L	1.0	0.070	1	06/24/13 09:30	06/24/13 17:20	7440-02-0	B
Selenium	ND	ug/L	1.0	0.14	1	06/24/13 09:30	06/24/13 17:20	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.10J	ug/L	1.0	0.050	1	06/24/13 09:30	06/24/13 18:10	7440-38-2	
Cadmium, Dissolved	9.6	ug/L	0.50	0.050	1	06/24/13 09:30	06/24/13 18:10	7440-43-9	D9
Chromium, Dissolved	0.34J	ug/L	1.0	0.070	1	06/24/13 09:30	06/24/13 18:10	7440-47-3	
Cobalt, Dissolved	1.1	ug/L	1.0	0.080	1	06/24/13 09:30	06/24/13 18:10	7440-48-4	D9
Copper, Dissolved	8.2	ug/L	1.0	0.12	1	06/24/13 09:30	06/25/13 10:47	7440-50-8	
Lead, Dissolved	0.16J	ug/L	1.0	0.030	1	06/24/13 09:30	06/24/13 18:10	7439-92-1	
Manganese, Dissolved	1210	ug/L	1.0	0.14	1	06/24/13 09:30	06/24/13 18:10	7439-96-5	D9
Nickel, Dissolved	2.8	ug/L	1.0	0.070	1	06/24/13 09:30	06/24/13 18:10	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	06/24/13 09:30	06/24/13 18:10	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	06/24/13 15:45	06/25/13 11:39	7439-97-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60147492

Sample: 517SHAFT465130619 Lab ID: 60147492001 Collected: 06/19/13 10:50 Received: 06/22/13 09:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	06/24/13 15:45	06/25/13 10:56	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	252	mg/L	20.0	1.2	1		06/27/13 12:14		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		06/27/13 12:14		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		06/27/13 12:14		
Alkalinity, Total as CaCO ₃	252	mg/L	20.0	1.2	1		06/27/13 12:14		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	ND	mg/L	1.0	0.090	1		06/24/13 09:32	24959-67-9	
Chloride	1.5	mg/L	1.0	0.50	1		06/24/13 09:32	16887-00-6	
Fluoride	1.7	mg/L	0.20	0.047	1		06/24/13 09:32	16984-48-8	
Sulfate	664	mg/L	100	16.0	100		06/24/13 12:52	14808-79-8	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site
Pace Project No.: 60147492

Sample: BLAINEOBF130619 Lab ID: 60147492002 Collected: 06/19/13 11:15 Received: 06/22/13 09:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	322000	ug/L	750	166	10	06/24/13 09:30	06/26/13 11:33	7429-90-5	
Calcium	408000	ug/L	1000	104	10	06/24/13 09:30	06/26/13 11:33	7440-70-2	
Iron	2010000	ug/L	500	116	10	06/24/13 09:30	06/26/13 11:33	7439-89-6	
Lithium	389	ug/L	50.0	12.1	5	06/24/13 09:30	06/26/13 15:37	7439-93-2	
Magnesium	259000	ug/L	500	64.8	10	06/24/13 09:30	06/25/13 14:14	7439-95-4	
Potassium	3700J	ug/L	5000	444	10	06/24/13 09:30	06/25/13 14:14	7440-09-7	
Silicon	52000	ug/L	5000	239	10	06/24/13 09:30	06/25/13 14:14	7440-21-3	
Sodium	6590	ug/L	5000	217	10	06/24/13 09:30	06/25/13 14:14	7440-23-5	
Zinc	289000	ug/L	500	33.3	10	06/24/13 09:30	06/25/13 14:14	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	301000	ug/L	750	166	10	06/24/13 09:30	06/25/13 12:14	7429-90-5	
Calcium, Dissolved	427000	ug/L	1000	104	10	06/24/13 09:30	06/25/13 12:14	7440-70-2	D9
Iron, Dissolved	2400000	ug/L	2500	580	50	06/24/13 09:30	06/26/13 12:15	7439-89-6	D9
Lithium, Dissolved	328	ug/L	100	24.2	10	06/24/13 09:30	06/25/13 12:14	7439-93-2	
Magnesium, Dissolved	262000	ug/L	500	64.8	10	06/24/13 09:30	06/25/13 12:14	7439-95-4	D9
Potassium, Dissolved	3320	ug/L	2500	222	5	06/24/13 09:30	06/25/13 12:26	7440-09-7	
Silicon, Dissolved	52400	ug/L	5000	239	10	06/24/13 09:30	06/25/13 12:14	7440-21-3	D9
Sodium, Dissolved	6360	ug/L	5000	217	10	06/24/13 09:30	06/25/13 12:14	7440-23-5	
Zinc, Dissolved	288000	ug/L	500	33.3	10	06/24/13 09:30	06/25/13 12:14	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	648	ug/L	100	5.0	100	06/24/13 09:30	06/24/13 18:51	7440-38-2	M1
Cadmium	1890	ug/L	50.0	5.0	100	06/24/13 09:30	06/24/13 18:51	7440-43-9	M1
Chromium	252	ug/L	100	7.0	100	06/24/13 09:30	06/24/13 18:51	7440-47-3	M1
Cobalt	288	ug/L	100	8.0	100	06/24/13 09:30	06/24/13 18:51	7440-48-4	M1
Copper	29200	ug/L	100	12.0	100	06/24/13 09:30	06/24/13 18:51	7440-50-8	M1
Lead	218	ug/L	1.0	0.030	1	06/24/13 09:30	06/24/13 17:24	7439-92-1	
Manganese	114000	ug/L	100	14.0	100	06/24/13 09:30	06/24/13 18:51	7439-96-5	M1
Nickel	395	ug/L	100	7.0	100	06/24/13 09:30	06/25/13 10:55	7440-02-0	M1
Selenium	32.2J	ug/L	100	14.0	100	06/24/13 09:30	06/24/13 18:51	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	597	ug/L	1.0	0.050	1	06/24/13 09:30	06/24/13 18:14	7440-38-2	M1
Cadmium, Dissolved	2010	ug/L	50.0	5.0	100	06/24/13 09:30	06/24/13 19:12	7440-43-9	D9,M1
Chromium, Dissolved	196	ug/L	1.0	0.070	1	06/24/13 09:30	06/24/13 18:14	7440-47-3	M1
Cobalt, Dissolved	212	ug/L	1.0	0.080	1	06/24/13 09:30	06/24/13 18:14	7440-48-4	M1
Copper, Dissolved	30900	ug/L	100	12.0	100	06/24/13 09:30	06/24/13 19:12	7440-50-8	D9,M1
Lead, Dissolved	215	ug/L	1.0	0.030	1	06/24/13 09:30	06/24/13 18:14	7439-92-1	M1
Manganese, Dissolved	119000	ug/L	100	14.0	100	06/24/13 09:30	06/24/13 19:12	7439-96-5	D9,M1
Nickel, Dissolved	316	ug/L	1.0	0.070	1	06/24/13 09:30	06/24/13 18:14	7440-02-0	M1
Selenium, Dissolved	29.1	ug/L	1.0	0.14	1	06/24/13 09:30	06/24/13 18:14	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	06/24/13 15:45	06/25/13 11:41	7439-97-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60147492

Sample: BLAINEOBF130619 Lab ID: 60147492002 Collected: 06/19/13 11:15 Received: 06/22/13 09:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	06/24/13 15:45	06/25/13 10:59	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		06/27/13 12:15		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		06/27/13 12:15		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		06/27/13 12:15		
Alkalinity, Total as CaCO ₃	ND	mg/L	20.0	1.2	1		06/27/13 12:15		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	ND	mg/L	1.0	0.090	1		06/24/13 11:04	24959-67-9	
Chloride	ND	mg/L	1.0	0.50	1		06/24/13 11:04	16887-00-6	
Fluoride	77.8	mg/L	4.0	0.94	20		06/24/13 14:09	16984-48-8	
Sulfate	20600	mg/L	5000	800	5000		06/26/13 09:32	14808-79-8	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60147492

Sample: BLAINEIBF130619 Lab ID: 60147492003 Collected: 06/19/13 11:20 Received: 06/22/13 09:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	280000	ug/L	750	166	10	06/24/13 09:30	06/26/13 11:35	7429-90-5	
Calcium	387000	ug/L	1000	104	10	06/24/13 09:30	06/26/13 11:35	7440-70-2	
Iron	1590000	ug/L	500	116	10	06/24/13 09:30	06/26/13 11:35	7439-89-6	
Lithium	345	ug/L	50.0	12.1	5	06/24/13 09:30	06/26/13 15:39	7439-93-2	
Magnesium	254000	ug/L	500	64.8	10	06/24/13 09:30	06/25/13 14:16	7439-95-4	
Potassium	4640J	ug/L	5000	444	10	06/24/13 09:30	06/25/13 14:16	7440-09-7	
Silicon	44700	ug/L	5000	239	10	06/24/13 09:30	06/25/13 14:16	7440-21-3	
Sodium	4910J	ug/L	5000	217	10	06/24/13 09:30	06/25/13 14:16	7440-23-5	
Zinc	233000	ug/L	500	33.3	10	06/24/13 09:30	06/25/13 14:16	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	256000	ug/L	750	166	10	06/24/13 09:30	06/25/13 12:20	7429-90-5	
Calcium, Dissolved	401000	ug/L	1000	104	10	06/24/13 09:30	06/25/13 12:20	7440-70-2	D9
Iron, Dissolved	1830000	ug/L	2500	580	50	06/24/13 09:30	06/26/13 12:17	7439-89-6	D9
Lithium, Dissolved	273	ug/L	100	24.2	10	06/24/13 09:30	06/25/13 12:20	7439-93-2	
Magnesium, Dissolved	244000	ug/L	500	64.8	10	06/24/13 09:30	06/25/13 12:20	7439-95-4	
Potassium, Dissolved	3940	ug/L	2500	222	5	06/24/13 09:30	06/25/13 12:30	7440-09-7	
Silicon, Dissolved	43900	ug/L	5000	239	10	06/24/13 09:30	06/25/13 12:20	7440-21-3	
Sodium, Dissolved	4400J	ug/L	5000	217	10	06/24/13 09:30	06/25/13 12:20	7440-23-5	
Zinc, Dissolved	226000	ug/L	500	33.3	10	06/24/13 09:30	06/25/13 12:20	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	35.4	ug/L	1.0	0.050	1	06/24/13 09:30	06/24/13 17:41	7440-38-2	
Cadmium	1530	ug/L	50.0	5.0	100	06/24/13 09:30	06/24/13 19:08	7440-43-9	
Chromium	183	ug/L	1.0	0.070	1	06/24/13 09:30	06/24/13 17:41	7440-47-3	
Cobalt	181	ug/L	1.0	0.080	1	06/24/13 09:30	06/24/13 17:41	7440-48-4	
Copper	26600	ug/L	100	12.0	100	06/24/13 09:30	06/24/13 19:08	7440-50-8	
Lead	184	ug/L	1.0	0.030	1	06/24/13 09:30	06/24/13 17:41	7439-92-1	
Manganese	101000	ug/L	100	14.0	100	06/24/13 09:30	06/24/13 19:08	7439-96-5	
Nickel	298	ug/L	1.0	0.070	1	06/24/13 09:30	06/24/13 17:41	7440-02-0	
Selenium	21.8	ug/L	1.0	0.14	1	06/24/13 09:30	06/24/13 17:41	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	34.8	ug/L	1.0	0.050	1	06/24/13 09:30	06/24/13 18:31	7440-38-2	
Cadmium, Dissolved	1480	ug/L	50.0	5.0	100	06/24/13 09:30	06/24/13 19:29	7440-43-9	
Chromium, Dissolved	177	ug/L	1.0	0.070	1	06/24/13 09:30	06/24/13 18:31	7440-47-3	
Cobalt, Dissolved	174	ug/L	1.0	0.080	1	06/24/13 09:30	06/24/13 18:31	7440-48-4	
Copper, Dissolved	26600	ug/L	100	12.0	100	06/24/13 09:30	06/24/13 19:29	7440-50-8	
Lead, Dissolved	176	ug/L	1.0	0.030	1	06/24/13 09:30	06/24/13 18:31	7439-92-1	
Manganese, Dissolved	100000	ug/L	100	14.0	100	06/24/13 09:30	06/24/13 19:29	7439-96-5	
Nickel, Dissolved	289	ug/L	1.0	0.070	1	06/24/13 09:30	06/24/13 18:31	7440-02-0	
Selenium, Dissolved	20.0	ug/L	1.0	0.14	1	06/24/13 09:30	06/24/13 18:31	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	06/24/13 15:45	06/25/13 11:43	7439-97-6	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60147492

Sample: BLAINEIBF130619		Lab ID: 60147492003		Collected: 06/19/13 11:20		Received: 06/22/13 09:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND ug/L		0.20	0.14	1	06/24/13 15:45	06/25/13 11:05	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	ND mg/L		20.0	1.2	1		06/27/13 12:17		
Alkalinity, Carbonate (CaCO ₃)	ND mg/L		20.0	1.2	1		06/27/13 12:17		
Alkalinity, Hydroxide (CaCO ₃)	ND mg/L		20.0	1.2	1		06/27/13 12:17		
Alkalinity, Total as CaCO ₃	ND mg/L		20.0	1.2	1		06/27/13 12:17		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND mg/L		1.0	0.090	1		06/24/13 11:20	24959-67-9	
Chloride	2.0 mg/L		1.0	0.50	1		06/24/13 11:20	16887-00-6	
Fluoride	81.9 mg/L		4.0	0.94	20		06/24/13 14:40	16984-48-8	
Sulfate	23100 mg/L		5000	800	5000		06/26/13 09:47	14808-79-8	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60147492

Sample: SILVERCREEK130619 Lab ID: 60147492004 Collected: 06/19/13 12:40 Received: 06/22/13 09:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	131	ug/L	75.0	16.6	1	06/24/13 09:30	06/26/13 11:37	7429-90-5	
Calcium	28800	ug/L	100	10.4	1	06/24/13 09:30	06/26/13 11:37	7440-70-2	
Iron	712	ug/L	50.0	11.6	1	06/24/13 09:30	06/26/13 11:37	7439-89-6	
Lithium	2.6J	ug/L	10.0	2.4	1	06/24/13 09:30	06/26/13 15:41	7439-93-2	
Magnesium	3090	ug/L	50.0	6.5	1	06/24/13 09:30	06/25/13 14:23	7439-95-4	
Potassium	544	ug/L	500	44.4	1	06/24/13 09:30	06/25/13 14:23	7440-09-7	
Silicon	1510	ug/L	500	23.9	1	06/24/13 09:30	06/25/13 14:23	7440-21-3	
Sodium	1340	ug/L	500	21.7	1	06/24/13 09:30	06/25/13 14:23	7440-23-5	
Zinc	214	ug/L	50.0	3.3	1	06/24/13 09:30	06/25/13 14:23	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	54.8J	ug/L	75.0	16.6	1	06/24/13 09:30	06/25/13 12:22	7429-90-5	
Calcium, Dissolved	30000	ug/L	100	10.4	1	06/24/13 09:30	06/25/13 12:22	7440-70-2	D9
Iron, Dissolved	157	ug/L	50.0	11.6	1	06/24/13 09:30	06/26/13 12:19	7439-89-6	
Lithium, Dissolved	ND	ug/L	10.0	2.4	1	06/24/13 09:30	06/25/13 12:22	7439-93-2	
Magnesium, Dissolved	2960	ug/L	50.0	6.5	1	06/24/13 09:30	06/25/13 12:22	7439-95-4	
Potassium, Dissolved	465J	ug/L	500	44.4	1	06/24/13 09:30	06/25/13 12:22	7440-09-7	
Silicon, Dissolved	1570	ug/L	500	23.9	1	06/24/13 09:30	06/25/13 12:22	7440-21-3	D9
Sodium, Dissolved	1260	ug/L	500	21.7	1	06/24/13 09:30	06/25/13 12:22	7440-23-5	
Zinc, Dissolved	139	ug/L	50.0	3.3	1	06/24/13 09:30	06/25/13 12:22	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.76J	ug/L	1.0	0.050	1	06/24/13 09:30	06/24/13 17:45	7440-38-2	
Cadmium	1.4	ug/L	0.50	0.050	1	06/24/13 09:30	06/24/13 17:45	7440-43-9	
Chromium	0.47J	ug/L	1.0	0.070	1	06/24/13 09:30	06/24/13 17:45	7440-47-3	
Cobalt	0.15J	ug/L	1.0	0.080	1	06/24/13 09:30	06/24/13 17:45	7440-48-4	
Copper	13.6	ug/L	1.0	0.12	1	06/24/13 09:30	06/24/13 17:45	7440-50-8	
Lead	2.3	ug/L	1.0	0.030	1	06/24/13 09:30	06/24/13 17:45	7439-92-1	
Manganese	54.0	ug/L	1.0	0.14	1	06/24/13 09:30	06/24/13 17:45	7439-96-5	
Nickel	0.38J	ug/L	1.0	0.070	1	06/24/13 09:30	06/24/13 17:45	7440-02-0	B
Selenium	0.18J	ug/L	1.0	0.14	1	06/24/13 09:30	06/24/13 17:45	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.56J	ug/L	1.0	0.050	1	06/24/13 09:30	06/24/13 18:35	7440-38-2	
Cadmium, Dissolved	0.76	ug/L	0.50	0.050	1	06/24/13 09:30	06/24/13 18:35	7440-43-9	
Chromium, Dissolved	0.36J	ug/L	1.0	0.070	1	06/24/13 09:30	06/24/13 18:35	7440-47-3	
Cobalt, Dissolved	ND	ug/L	1.0	0.080	1	06/24/13 09:30	06/24/13 18:35	7440-48-4	
Copper, Dissolved	2.7	ug/L	1.0	0.12	1	06/24/13 09:30	06/25/13 10:51	7440-50-8	
Lead, Dissolved	1.1	ug/L	1.0	0.030	1	06/24/13 09:30	06/24/13 18:35	7439-92-1	
Manganese, Dissolved	14.3	ug/L	1.0	0.14	1	06/24/13 09:30	06/25/13 10:51	7439-96-5	
Nickel, Dissolved	ND	ug/L	1.0	0.070	1	06/24/13 09:30	06/25/13 10:51	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	06/24/13 09:30	06/24/13 18:35	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	06/24/13 15:45	06/25/13 11:45	7439-97-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60147492

Sample: SILVERCREEK130619 Lab ID: 60147492004 Collected: 06/19/13 12:40 Received: 06/22/13 09:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	06/24/13 15:45	06/25/13 11:08	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	68.4	mg/L	20.0	1.2	1		06/27/13 12:21		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		06/27/13 12:21		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		06/27/13 12:21		
Alkalinity, Total as CaCO ₃	68.4	mg/L	20.0	1.2	1		06/27/13 12:21		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	ND	mg/L	1.0	0.090	1		06/24/13 15:11	24959-67-9	
Chloride	0.56J	mg/L	1.0	0.50	1		06/24/13 15:11	16887-00-6	
Fluoride	ND	mg/L	0.20	0.047	1		06/24/13 15:11	16984-48-8	
Sulfate	8.5	mg/L	1.0	0.16	1		06/24/13 15:11	14808-79-8	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site
Pace Project No.: 60147492

Sample: DR3A130619		Lab ID: 60147492005		Collected: 06/19/13 14:20		Received: 06/22/13 09:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum	956	ug/L	75.0	16.6	1	06/24/13 09:30	06/26/13 11:39	7429-90-5	
Calcium	245000	ug/L	100	10.4	1	06/24/13 09:30	06/26/13 11:39	7440-70-2	
Iron	8490	ug/L	50.0	11.6	1	06/24/13 09:30	06/26/13 11:39	7439-89-6	
Lithium	29.4	ug/L	10.0	2.4	1	06/24/13 09:30	06/26/13 15:43	7439-93-2	
Magnesium	20300	ug/L	50.0	6.5	1	06/24/13 09:30	06/25/13 14:25	7439-95-4	
Potassium	4010	ug/L	500	44.4	1	06/24/13 09:30	06/25/13 14:25	7440-09-7	
Silicon	8100	ug/L	500	23.9	1	06/24/13 09:30	06/25/13 14:25	7440-21-3	
Sodium	12400	ug/L	500	21.7	1	06/24/13 09:30	06/25/13 14:25	7440-23-5	
Zinc	4340	ug/L	50.0	3.3	1	06/24/13 09:30	06/25/13 14:25	7440-66-6	
200.7 Metals, Dissolved		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	100	ug/L	75.0	16.6	1	06/24/13 09:30	06/25/13 12:24	7429-90-5	
Calcium, Dissolved	229000	ug/L	100	10.4	1	06/24/13 09:30	06/25/13 12:24	7440-70-2	
Iron, Dissolved	1790	ug/L	100	23.2	2	06/24/13 09:30	06/26/13 12:21	7439-89-6	
Lithium, Dissolved	21.4	ug/L	10.0	2.4	1	06/24/13 09:30	06/25/13 12:24	7439-93-2	
Magnesium, Dissolved	18200	ug/L	50.0	6.5	1	06/24/13 09:30	06/25/13 12:24	7439-95-4	
Potassium, Dissolved	3360	ug/L	500	44.4	1	06/24/13 09:30	06/25/13 12:24	7440-09-7	
Silicon, Dissolved	7200	ug/L	500	23.9	1	06/24/13 09:30	06/25/13 12:24	7440-21-3	
Sodium, Dissolved	11100	ug/L	500	21.7	1	06/24/13 09:30	06/25/13 12:24	7440-23-5	
Zinc, Dissolved	3610	ug/L	50.0	3.3	1	06/24/13 09:30	06/25/13 12:24	7440-66-6	
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Arsenic	1.4	ug/L	1.0	0.050	1	06/24/13 09:30	06/24/13 17:49	7440-38-2	
Cadmium	23.4	ug/L	0.50	0.050	1	06/24/13 09:30	06/24/13 17:49	7440-43-9	
Chromium	1.0	ug/L	1.0	0.070	1	06/24/13 09:30	06/24/13 17:49	7440-47-3	
Cobalt	2.6	ug/L	1.0	0.080	1	06/24/13 09:30	06/24/13 17:49	7440-48-4	
Copper	194	ug/L	1.0	0.12	1	06/24/13 09:30	06/24/13 17:49	7440-50-8	
Lead	16.2	ug/L	1.0	0.030	1	06/24/13 09:30	06/24/13 17:49	7439-92-1	
Manganese	1840	ug/L	1.0	0.14	1	06/24/13 09:30	06/24/13 17:49	7439-96-5	
Nickel	3.2	ug/L	1.0	0.070	1	06/24/13 09:30	06/24/13 17:49	7440-02-0	
Selenium	0.19J	ug/L	1.0	0.14	1	06/24/13 09:30	06/24/13 17:49	7782-49-2	
200.8 MET ICPMS, Dissolved		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Arsenic, Dissolved	0.17J	ug/L	1.0	0.050	1	06/24/13 09:30	06/24/13 18:39	7440-38-2	
Cadmium, Dissolved	20.8	ug/L	0.50	0.050	1	06/24/13 09:30	06/24/13 18:39	7440-43-9	
Chromium, Dissolved	0.43J	ug/L	1.0	0.070	1	06/24/13 09:30	06/24/13 18:39	7440-47-3	
Cobalt, Dissolved	2.4	ug/L	1.0	0.080	1	06/24/13 09:30	06/24/13 18:39	7440-48-4	
Copper, Dissolved	19.1	ug/L	1.0	0.12	1	06/24/13 09:30	06/24/13 18:39	7440-50-8	
Lead, Dissolved	0.14J	ug/L	1.0	0.030	1	06/24/13 09:30	06/24/13 18:39	7439-92-1	
Manganese, Dissolved	1760	ug/L	1.0	0.14	1	06/24/13 09:30	06/24/13 18:39	7439-96-5	
Nickel, Dissolved	3.9	ug/L	1.0	0.070	1	06/24/13 09:30	06/24/13 18:39	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	06/24/13 09:30	06/24/13 18:39	7782-49-2	
245.1 Mercury		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	ND	ug/L	0.20	0.14	1	06/24/13 15:45	06/25/13 11:48	7439-97-6	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60147492

Sample: DR3A130619		Lab ID: 60147492005		Collected: 06/19/13 14:20		Received: 06/22/13 09:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND ug/L		0.20	0.14	1	06/24/13 15:45	06/25/13 11:10	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	91.2 mg/L		20.0	1.2	1		06/27/13 12:34		
Alkalinity, Carbonate (CaCO ₃)	ND mg/L		20.0	1.2	1		06/27/13 12:34		
Alkalinity, Hydroxide (CaCO ₃)	ND mg/L		20.0	1.2	1		06/27/13 12:34		
Alkalinity, Total as CaCO ₃	91.2 mg/L		20.0	1.2	1		06/27/13 12:34		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND mg/L		1.0	0.090	1		06/24/13 11:51	24959-67-9	
Chloride	0.77J mg/L		1.0	0.50	1		06/24/13 11:51	16887-00-6	
Fluoride	2.3 mg/L		0.20	0.047	1		06/24/13 11:51	16984-48-8	
Sulfate	653 mg/L		100	16.0	100		06/24/13 15:42	14808-79-8	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60147492

QC Batch: MERP/7451 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60147492001, 60147492002, 60147492003, 60147492004, 60147492005

METHOD BLANK: 1210075 Matrix: Water
Associated Lab Samples: 60147492001, 60147492002, 60147492003, 60147492004, 60147492005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	06/25/13 11:14	

LABORATORY CONTROL SAMPLE: 1210076

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.1	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1210077 1210078

Parameter	Units	60147519001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	0.95	0.81	18	16	70-130	16	20	M1

MATRIX SPIKE SAMPLE: 1210079

Parameter	Units	60147275002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	ND	5	5.2	103	70-130	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60147492

QC Batch: MERP/7450 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury - Dissolved
Associated Lab Samples: 60147492001, 60147492002, 60147492003, 60147492004, 60147492005

METHOD BLANK: 1210068 Matrix: Water
Associated Lab Samples: 60147492001, 60147492002, 60147492003, 60147492004, 60147492005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	06/25/13 10:12	

LABORATORY CONTROL SAMPLE: 1210069

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	4.7	94	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1210070 1210071

Parameter	Units	10232530006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury, Dissolved	ug/L	<0.20	5	5	3.8	4.2	75	83	70-130	10	20	

MATRIX SPIKE SAMPLE: 1210072

Parameter	Units	10232530007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	<0.20	5	5.2	102	70-130	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60147492

QC Batch: MPRP/23191 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60147492001, 60147492002, 60147492003, 60147492004, 60147492005

METHOD BLANK: 1209811 Matrix: Water
Associated Lab Samples: 60147492001, 60147492002, 60147492003, 60147492004, 60147492005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	06/26/13 11:19	
Calcium	ug/L	16.5J	100	06/26/13 11:19	
Iron	ug/L	ND	50.0	06/26/13 11:19	
Lithium	ug/L	ND	10.0	06/26/13 15:25	
Magnesium	ug/L	ND	50.0	06/25/13 14:01	
Potassium	ug/L	ND	500	06/25/13 14:01	
Silicon	ug/L	26.9J	500	06/25/13 14:01	
Sodium	ug/L	ND	500	06/25/13 14:01	
Zinc	ug/L	ND	50.0	06/25/13 14:01	

LABORATORY CONTROL SAMPLE: 1209812

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	10000	100	85-115	
Calcium	ug/L	10000	9220	92	85-115	
Iron	ug/L	10000	9310	93	85-115	
Lithium	ug/L	1000	1030	103	85-115	
Magnesium	ug/L	10000	9880	99	85-115	
Potassium	ug/L	10000	9870	99	85-115	
Silicon	ug/L	5000	4700	94	85-115	
Sodium	ug/L	10000	9710	97	85-115	
Zinc	ug/L	1000	1020	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1209813 1209814

Parameter	Units	60147492001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	76.4	10000	10000	9920	9890	98	98	70-130	0	8	
Calcium	ug/L	312000	10000	10000	312000	308000	2	-39	70-130	1	9 M1	
Iron	ug/L	719	10000	10000	9930	9760	92	90	70-130	2	10	
Lithium	ug/L	32.8	1000	1000	984	1100	95	107	70-130	11	20	
Magnesium	ug/L	26300	10000	10000	34800	35600	85	93	70-130	2	9	
Potassium	ug/L	24900	10000	10000	35400	35800	105	110	70-130	1	7 M1	
Silicon	ug/L	6360	5000	5000	11500	11700	103	107	70-130	2	5	
Sodium	ug/L	9230	10000	10000	19600	19700	104	105	70-130	0	8 M1	
Zinc	ug/L	2990	1000	1000	3830	3830	83	84	70-130	0	11	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60147492

QC Batch: MPRP/23189 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Dissolved
Associated Lab Samples: 60147492001, 60147492002, 60147492003, 60147492004, 60147492005

METHOD BLANK: 1209803 Matrix: Water
Associated Lab Samples: 60147492001, 60147492002, 60147492003, 60147492004, 60147492005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	06/25/13 11:56	
Calcium, Dissolved	ug/L	ND	100	06/25/13 11:56	
Iron, Dissolved	ug/L	ND	50.0	06/26/13 12:03	
Lithium, Dissolved	ug/L	ND	10.0	06/25/13 11:56	
Magnesium, Dissolved	ug/L	ND	50.0	06/25/13 11:56	
Potassium, Dissolved	ug/L	ND	500	06/25/13 11:56	
Silicon, Dissolved	ug/L	ND	500	06/25/13 11:56	
Sodium, Dissolved	ug/L	ND	500	06/25/13 11:56	
Zinc, Dissolved	ug/L	ND	50.0	06/25/13 11:56	

LABORATORY CONTROL SAMPLE: 1209804

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	9130	91	85-115	
Calcium, Dissolved	ug/L	10000	9320	93	85-115	
Iron, Dissolved	ug/L	10000	9710	97	85-115	
Lithium, Dissolved	ug/L	1000	942	94	85-115	
Magnesium, Dissolved	ug/L	10000	9030	90	85-115	
Potassium, Dissolved	ug/L	10000	9020	90	85-115	
Silicon, Dissolved	ug/L	5000	4660	93	85-115	
Sodium, Dissolved	ug/L	10000	9450	94	85-115	
Zinc, Dissolved	ug/L	1000	962	96	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1209805 1209806

Parameter	Units	60147492001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	87.6	10000	10000	9450	9750	94	97	70-130	3	8	
Calcium, Dissolved	ug/L	314000	10000	10000	311000	312000	-30	-18	70-130	0	9	M1
Iron, Dissolved	ug/L	11.8J	10000	10000	9980	10500	100	105	70-130	5	10	
Lithium, Dissolved	ug/L	26.6	1000	1000	1010	1050	99	103	70-130	4	20	
Magnesium, Dissolved	ug/L	25300	10000	10000	34400	34700	91	94	70-130	1	9	
Potassium, Dissolved	ug/L	24100	10000	10000	32600	33200	85	91	70-130	2	7	
Silicon, Dissolved	ug/L	6960	5000	5000	11800	12100	96	102	70-130	3	5	
Sodium, Dissolved	ug/L	9300	10000	10000	18800	19400	95	101	70-130	3	8	
Zinc, Dissolved	ug/L	2950	1000	1000	3920	3880	96	93	70-130	1	11	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60147492

QC Batch: MPRP/23192 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60147492001, 60147492002, 60147492003, 60147492004, 60147492005

METHOD BLANK: 1209815 Matrix: Water
Associated Lab Samples: 60147492001, 60147492002, 60147492003, 60147492004, 60147492005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	06/24/13 17:12	
Cadmium	ug/L	ND	0.50	06/24/13 17:12	
Chromium	ug/L	ND	1.0	06/24/13 17:12	
Cobalt	ug/L	ND	1.0	06/24/13 17:12	
Copper	ug/L	0.31J	1.0	06/24/13 17:12	
Lead	ug/L	ND	1.0	06/24/13 17:12	
Manganese	ug/L	0.20J	1.0	06/24/13 17:12	
Nickel	ug/L	0.25J	1.0	06/24/13 17:12	
Selenium	ug/L	ND	1.0	06/24/13 17:12	

LABORATORY CONTROL SAMPLE: 1209816

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	39.8	100	85-115	
Cadmium	ug/L	40	38.3	96	85-115	
Chromium	ug/L	40	39.2	98	85-115	
Cobalt	ug/L	40	38.5	96	85-115	
Copper	ug/L	40	38.1	95	85-115	
Lead	ug/L	40	38.5	96	85-115	
Manganese	ug/L	40	39.2	98	85-115	
Nickel	ug/L	40	39.2	98	85-115	
Selenium	ug/L	40	39.0	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1209817 1209818

Parameter	Units	60147492002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	648	40	40	609	615	-96	-83	70-130	1	20	M1
Cadmium	ug/L	1890	40	40	1920	1930	55	95	70-130	1	20	M1
Chromium	ug/L	252	40	40	220	221	-79	-76	70-130	0	20	M1
Cobalt	ug/L	288	40	40	234	234	-135	-135	70-130	0	20	M1
Copper	ug/L	29200	40	40	29000	29500	-625	675	70-130	2	20	M1
Lead	ug/L	218	40	40	246	253	71	88	70-130	3	20	
Manganese	ug/L	114000	40	40	112000	114000	-3500	250	70-130	1	20	M1
Nickel	ug/L	395	40	40	334	332	-154	-158	70-130	0	20	M1
Selenium	ug/L	32.2J	40	40	70.6	70.1	96	95	70-130	1	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60147492

QC Batch: MPRP/23190 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60147492001, 60147492002, 60147492003, 60147492004, 60147492005

METHOD BLANK: 1209807 Matrix: Water
Associated Lab Samples: 60147492001, 60147492002, 60147492003, 60147492004, 60147492005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	06/24/13 18:02	
Cadmium, Dissolved	ug/L	ND	0.50	06/24/13 18:02	
Chromium, Dissolved	ug/L	ND	1.0	06/24/13 18:02	
Cobalt, Dissolved	ug/L	ND	1.0	06/24/13 18:02	
Copper, Dissolved	ug/L	ND	1.0	06/25/13 10:38	
Lead, Dissolved	ug/L	ND	1.0	06/24/13 18:02	
Manganese, Dissolved	ug/L	ND	1.0	06/25/13 10:38	
Nickel, Dissolved	ug/L	0.17J	1.0	06/24/13 18:02	
Selenium, Dissolved	ug/L	ND	1.0	06/24/13 18:02	

LABORATORY CONTROL SAMPLE: 1209808

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	39.8	99	85-115	
Cadmium, Dissolved	ug/L	40	39.4	98	85-115	
Chromium, Dissolved	ug/L	40	39.9	100	85-115	
Cobalt, Dissolved	ug/L	40	40.2	101	85-115	
Copper, Dissolved	ug/L	40	41.0	103	85-115	
Lead, Dissolved	ug/L	40	39.4	99	85-115	
Manganese, Dissolved	ug/L	40	40.6	101	85-115	
Nickel, Dissolved	ug/L	40	40.5	101	85-115	
Selenium, Dissolved	ug/L	40	39.1	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1209809 1209810

Parameter	Units	60147492002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	597	40	40	624	596	68	-3	70-130	5	20	M1
Cadmium, Dissolved	ug/L	2010	40	40	1980	1950	-82	-152	70-130	1	20	M1
Chromium, Dissolved	ug/L	196	40	40	225	214	71	43	70-130	5	20	M1
Cobalt, Dissolved	ug/L	212	40	40	237	226	62	34	70-130	5	20	M1
Copper, Dissolved	ug/L	30900	40	40	30100	29700	-2100	-3050	70-130	1	20	M1
Lead, Dissolved	ug/L	215	40	40	259	237	109	55	70-130	9	20	M1
Manganese, Dissolved	ug/L	119000	40	40	115000	114000	-8000	-12250	70-130	1	20	M1
Nickel, Dissolved	ug/L	316	40	40	338	323	56	18	70-130	5	20	M1
Selenium, Dissolved	ug/L	29.1	40	40	70.8	68.1	104	98	70-130	4	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60147492

QC Batch: WET/42042 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60147492001, 60147492002, 60147492003, 60147492004, 60147492005

METHOD BLANK: 1210906 Matrix: Water
Associated Lab Samples: 60147492001, 60147492002, 60147492003, 60147492004, 60147492005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	06/27/13 11:51	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	06/27/13 11:51	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	06/27/13 11:51	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	06/27/13 11:51	

LABORATORY CONTROL SAMPLE: 1210907

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	479	96	90-110	

SAMPLE DUPLICATE: 1210910

Parameter	Units	60147500002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	291	295	1	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	291	295	1	10	

SAMPLE DUPLICATE: 1210911

Parameter	Units	60147495001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	89.0	92.2	4	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	89.0	92.2	4	10	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60147492

QC Batch: WETA/25219 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60147492001, 60147492002, 60147492003, 60147492004, 60147492005

METHOD BLANK: 1209911 Matrix: Water
Associated Lab Samples: 60147492001, 60147492002, 60147492003, 60147492004, 60147492005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	10.0	06/24/13 15:57	
Chloride	mg/L	ND	10.0	06/24/13 15:57	
Fluoride	mg/L	ND	2.0	06/24/13 15:57	
Sulfate	mg/L	ND	10.0	06/24/13 15:57	

METHOD BLANK: 1210976 Matrix: Water

Associated Lab Samples: 60147492002, 60147492003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.0	06/26/13 09:01	

LABORATORY CONTROL SAMPLE: 1209912

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.0	100	90-110	
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	2.5	2.4	96	90-110	
Sulfate	mg/L	5	5.3	105	90-110	

LABORATORY CONTROL SAMPLE: 1210977

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	4.7	94	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1209913 1209914

Parameter	Units	60147492001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	ND	5	5	4.9	5.2	98	103	75-119	5	10	
Chloride	mg/L	1.5	5	5	5.6	5.7	82	84	64-118	1	12	
Fluoride	mg/L	1.7	2.5	2.5	4.0	4.1	91	93	75-110	1	10	
Sulfate	mg/L	664	500	500	1160	1140	99	95	61-119	2	10	

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QUALIFIERS

Project: Rico-Argentine Mine Site

Pace Project No.: 60147492

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rico-Argentine Mine Site

Pace Project No.: 60147492

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60147492001	517SHAFT465130619	EPA 200.7	MPRP/23191	EPA 200.7	ICP/18291
60147492002	BLAINEOBF130619	EPA 200.7	MPRP/23191	EPA 200.7	ICP/18291
60147492003	BLAINEIBF130619	EPA 200.7	MPRP/23191	EPA 200.7	ICP/18291
60147492004	SILVERCREEK130619	EPA 200.7	MPRP/23191	EPA 200.7	ICP/18291
60147492005	DR3A130619	EPA 200.7	MPRP/23191	EPA 200.7	ICP/18291
60147492001	517SHAFT465130619	EPA 200.7	MPRP/23189	EPA 200.7	ICP/18290
60147492002	BLAINEOBF130619	EPA 200.7	MPRP/23189	EPA 200.7	ICP/18290
60147492003	BLAINEIBF130619	EPA 200.7	MPRP/23189	EPA 200.7	ICP/18290
60147492004	SILVERCREEK130619	EPA 200.7	MPRP/23189	EPA 200.7	ICP/18290
60147492005	DR3A130619	EPA 200.7	MPRP/23189	EPA 200.7	ICP/18290
60147492001	517SHAFT465130619	EPA 200.8	MPRP/23192	EPA 200.8	ICPM/2343
60147492002	BLAINEOBF130619	EPA 200.8	MPRP/23192	EPA 200.8	ICPM/2343
60147492003	BLAINEIBF130619	EPA 200.8	MPRP/23192	EPA 200.8	ICPM/2343
60147492004	SILVERCREEK130619	EPA 200.8	MPRP/23192	EPA 200.8	ICPM/2343
60147492005	DR3A130619	EPA 200.8	MPRP/23192	EPA 200.8	ICPM/2343
60147492001	517SHAFT465130619	EPA 200.8	MPRP/23190	EPA 200.8	ICPM/2342
60147492002	BLAINEOBF130619	EPA 200.8	MPRP/23190	EPA 200.8	ICPM/2342
60147492003	BLAINEIBF130619	EPA 200.8	MPRP/23190	EPA 200.8	ICPM/2342
60147492004	SILVERCREEK130619	EPA 200.8	MPRP/23190	EPA 200.8	ICPM/2342
60147492005	DR3A130619	EPA 200.8	MPRP/23190	EPA 200.8	ICPM/2342
60147492001	517SHAFT465130619	EPA 245.1	MERP/7451	EPA 245.1	MERC/7408
60147492002	BLAINEOBF130619	EPA 245.1	MERP/7451	EPA 245.1	MERC/7408
60147492003	BLAINEIBF130619	EPA 245.1	MERP/7451	EPA 245.1	MERC/7408
60147492004	SILVERCREEK130619	EPA 245.1	MERP/7451	EPA 245.1	MERC/7408
60147492005	DR3A130619	EPA 245.1	MERP/7451	EPA 245.1	MERC/7408
60147492001	517SHAFT465130619	EPA 245.1	MERP/7450	EPA 245.1	MERC/7407
60147492002	BLAINEOBF130619	EPA 245.1	MERP/7450	EPA 245.1	MERC/7407
60147492003	BLAINEIBF130619	EPA 245.1	MERP/7450	EPA 245.1	MERC/7407
60147492004	SILVERCREEK130619	EPA 245.1	MERP/7450	EPA 245.1	MERC/7407
60147492005	DR3A130619	EPA 245.1	MERP/7450	EPA 245.1	MERC/7407
60147492001	517SHAFT465130619	SM 2320B	WET/42042		
60147492002	BLAINEOBF130619	SM 2320B	WET/42042		
60147492003	BLAINEIBF130619	SM 2320B	WET/42042		
60147492004	SILVERCREEK130619	SM 2320B	WET/42042		
60147492005	DR3A130619	SM 2320B	WET/42042		
60147492001	517SHAFT465130619	EPA 300.0	WETA/25219		
60147492002	BLAINEOBF130619	EPA 300.0	WETA/25219		
60147492003	BLAINEIBF130619	EPA 300.0	WETA/25219		
60147492004	SILVERCREEK130619	EPA 300.0	WETA/25219		
60147492005	DR3A130619	EPA 300.0	WETA/25219		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt
ESI Tech Spec Client

WO#: 60147492



Client Name: BP Amec

Optional

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Proj Due Date:

Tracking #: 127330872210056083 Pace Shipping Label Used? Yes ☒ No ☐

Proj Name:

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☒ Ziploc

Thermometer Used: T-112 / T-194

Type of Ice: Wet ☒ Blue ☐ None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 0.2

Date and initials of person examining contents: 6/22/13 MS

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses	Matrix: <u>ui</u>	13.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:

Client Notification/ Resolution:

Copy COC to Client? Y / N

Field Data Required? Y / N

Person Contacted: _____

Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Amw

Date: 6/24/13

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: <u>1015</u>	Start:
End: <u>1025</u>	End:
Temp:	Temp:

Laboratory Management Program LaMP Chain of Custody Record

Page 1 of 1

BP/ARC Project Name: Rico-Argentine Mine Site

Req Due Date (mm/dd/yy): _____

Rush TAT: Yes ☒ No ☐

BP/ARC Facility No: _____

Lab Work Order Number: _____

Lab Name: Pace Analytical Laboratories, Inc.	BP/ARC Facility Address: Rico-Argentine Mine	Consultant/Contractor: AMEC E&I, Inc.
Lab Address: 9608 Loiret Blvd., Lenexa, KS 66219	City, State, ZIP Code: Rico, Colorado	Consultant/Contractor Project No: SA11161313.300H
Lab PM: Heather Wilson	Lead Regulatory Agency: U.S. EPA Region 8	Address: 10670 White Rock Road, Suite 100, Rancho Cordova, CA
Lab Phone: (913) 563-1407	California Global ID No.: NA	Consultant/Contractor PM: Marc Lombardi
Lab Shipping Acct: UPS # 733W87	Enfos Proposal No: D00LL-0010 WR 266494	Phone: 916-636-3200
Lab Bottle Order No: NA	Accounting Mode: Provision <input checked="" type="checkbox"/> OOC-BU <input type="checkbox"/> OOC-RM <input type="checkbox"/>	Email Report/EDD To: lynda.lombardi@amec.com
Other Info: 2013 517 Injection Treatability Study	Stage: 4-Execute Activity: Spend	Invoice To: BP/ARC <input checked="" type="checkbox"/> Contractor <input type="checkbox"/>

BP/ARC EBM: Anthony Brown				Matrix				No. Containers / Preservative				Requested Analyses										Report Type & QC Level	
EBM Phone: 714-228-6770																						Standard <u>X</u>	
EBM Email: anthony.brown@bp.com																						Full Data Package _____	
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Methanol		Tot Metals-see notes (E200.7/200.8/E245.1)	Dis Metals-see notes (E200.7/200.8/E245.1)	Alkalinity-Total, HCO ₃ , CO ₃ , OH (SM2320B)	Bromide (E300.0)	Chloride (E300.0)	Fluoride (E300.0)	Sulfate (E300.0)			
	517 SHAFT 465130619	6/19/13	1050	BAW	X	100%	3	1	0	2	0	0	1.0	X	X	X	X	X	X	X	X	X	46/52
	BLAINE 08F130619	6/19/13	1115		X		3	1	0	2	0	0		X	X	X	X	X	X	X	X		
	BLAINE 18F130619	6/19/13	1120		X		3	1	0	2	0	0		X	X	X	X	X	X	X	X		
	SILVER CREEK 130619	6/19/13	1240		X		3	1	0	2	0	0		X	X	X	X	X	X	X	X		
	DR3A 130619	6/19/13	1420		X		3	1	0	2	0	0		X	X	X	X	X	X	X	X		
<div>6/21/13</div>																							
RUSH 5-day TAT																							

Sampler's Name: <u>APRIL KAZIER</u>	Relinquished By / Affiliation: <u>[Signature]</u>	Date: <u>6/21/13</u>	Time: <u>1400</u>	Accepted By / Affiliation: <u>E Brockett / Pace</u>	Date: <u>6/22</u>	Time: <u>0920</u>
Sampler's Company: <u>AMEC</u>						
Shipment Method: <u>UPS</u>	Ship Date: <u>6/21/13</u>					
Shipment Tracking No: <u>1Z733W872210056083</u>						

Special Instructions: _____

July 02, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO-ARGENTINE MINE SITE
Pace Project No.: 60147595

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on June 25, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60147595

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60147595

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60147595002	DR3A1306220400	Water	06/22/13 04:00	06/25/13 10:10
60147595005	DR3A1306230400	Water	06/23/13 04:00	06/25/13 10:10
60147595008	DR3A1306240400	Water	06/24/13 04:00	06/25/13 10:10

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SAMPLE ANALYTE COUNT

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60147595

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60147595002	DR3A1306220400	EPA 200.7	TJT	9
		EPA 200.7	TJT	9
		EPA 200.8	JGP	9
		EPA 200.8	JGP	9
		EPA 245.1	TDS	1
		EPA 245.1	TDS	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60147595005	DR3A1306230400	EPA 200.7	TJT	9
		EPA 200.7	TJT	9
		EPA 200.8	JGP	9
		EPA 200.8	JGP	9
		EPA 245.1	TDS	1
		EPA 245.1	TDS	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60147595008	DR3A1306240400	EPA 200.7	TJT	9
		EPA 200.7	TJT	9
		EPA 200.8	JGP	9
		EPA 200.8	JGP	9
		EPA 245.1	TDS	1
		EPA 245.1	TDS	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60147595

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: July 02, 2013

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23234

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60147595002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1210661)
 - Calcium
 - Zinc
- MSD (Lab ID: 1210662)
 - Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60147595

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: July 02, 2013

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23232

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60147595002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1210653)
 - Calcium, Dissolved
- MSD (Lab ID: 1210654)
 - Calcium, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60147595

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: July 02, 2013

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23235

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60147595005

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1210665)
 - Manganese
- MSD (Lab ID: 1210666)
 - Manganese

Additional Comments:

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60147595

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: July 02, 2013

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23233

B: Analyte was detected in the associated method blank.

- BLANK for HBN 296333 [MPRP/232 (Lab ID: 1210655)]
- Lead, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23233

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60147595005

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1210657)
 - Manganese, Dissolved
- MSD (Lab ID: 1210658)
 - Manganese, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60147595

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: July 02, 2013

General Information:

3 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60147595

Method: EPA 245.1

Description: 245.1 Mercury, Dissolved

Client: BP AMEC

Date: July 02, 2013

General Information:

3 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60147595

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: July 02, 2013

General Information:

3 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60147595

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: July 02, 2013

General Information:

3 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60147595

Sample: DR3A1306220400			Lab ID: 60147595002		Collected: 06/22/13 04:00		Received: 06/25/13 10:10		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual	
200.7 Metals, Total			Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum	958	ug/L	75.0	16.6	1	06/25/13 13:45	06/28/13 11:02	7429-90-5	M1	
Calcium	257000	ug/L	100	10.4	1	06/25/13 13:45	06/28/13 11:02	7440-70-2		
Iron	9080	ug/L	50.0	11.6	1	06/25/13 13:45	06/28/13 11:02	7439-89-6		
Lithium	26.6	ug/L	10.0	2.4	1	06/25/13 13:45	06/28/13 11:02	7439-93-2		
Magnesium	21700	ug/L	50.0	6.5	1	06/25/13 13:45	06/28/13 11:02	7439-95-4		
Potassium	3930	ug/L	500	44.4	1	06/25/13 13:45	06/28/13 11:02	7440-09-7		
Silicon	8940	ug/L	500	23.9	1	06/25/13 13:45	06/28/13 11:02	7440-21-3		
Sodium	12300	ug/L	500	21.7	1	06/25/13 13:45	06/28/13 11:02	7440-23-5	M1	
Zinc	4560	ug/L	50.0	3.3	1	06/25/13 13:45	06/28/13 11:02	7440-66-6		
200.7 Metals, Dissolved			Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	66.8J	ug/L	75.0	16.6	1	06/25/13 13:45	06/28/13 10:25	7429-90-5	D9,M1	
Calcium, Dissolved	260000	ug/L	100	10.4	1	06/25/13 13:45	06/28/13 10:25	7440-70-2		
Iron, Dissolved	17.6J	ug/L	50.0	11.6	1	06/25/13 13:45	06/28/13 10:25	7439-89-6		
Lithium, Dissolved	25.2	ug/L	10.0	2.4	1	06/25/13 13:45	06/28/13 10:25	7439-93-2		
Magnesium, Dissolved	21300	ug/L	50.0	6.5	1	06/25/13 13:45	06/28/13 10:25	7439-95-4		
Potassium, Dissolved	3780	ug/L	500	44.4	1	06/25/13 13:45	06/28/13 10:25	7440-09-7		
Silicon, Dissolved	7980	ug/L	500	23.9	1	06/25/13 13:45	06/27/13 14:05	7440-21-3		
Sodium, Dissolved	11800	ug/L	500	21.7	1	06/25/13 13:45	06/28/13 10:25	7440-23-5		
Zinc, Dissolved	3730	ug/L	50.0	3.3	1	06/25/13 13:45	06/27/13 14:05	7440-66-6		
200.8 MET ICPMS			Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Arsenic	1.6	ug/L	1.0	0.050	1	06/25/13 13:45	06/27/13 15:22	7440-38-2		
Cadmium	24.4	ug/L	0.50	0.050	1	06/25/13 13:45	06/27/13 15:22	7440-43-9		
Chromium	0.86J	ug/L	1.0	0.070	1	06/25/13 13:45	06/27/13 15:22	7440-47-3		
Cobalt	2.8	ug/L	1.0	0.080	1	06/25/13 13:45	06/27/13 15:22	7440-48-4		
Copper	210	ug/L	1.0	0.12	1	06/25/13 13:45	06/27/13 15:22	7440-50-8		
Lead	16.5	ug/L	1.0	0.030	1	06/25/13 13:45	06/27/13 15:22	7439-92-1		
Manganese	1980	ug/L	1.0	0.14	1	06/25/13 13:45	06/27/13 15:22	7439-96-5		
Nickel	3.5	ug/L	1.0	0.070	1	06/25/13 13:45	06/27/13 15:22	7440-02-0		
Selenium	0.28J	ug/L	1.0	0.14	1	06/25/13 13:45	06/27/13 15:22	7782-49-2		
200.8 MET ICPMS, Dissolved			Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Arsenic, Dissolved	0.073J	ug/L	1.0	0.050	1	06/25/13 13:45	06/27/13 16:04	7440-38-2	B	
Cadmium, Dissolved	20.1	ug/L	0.50	0.050	1	06/25/13 13:45	06/27/13 16:04	7440-43-9		
Chromium, Dissolved	0.23J	ug/L	1.0	0.070	1	06/25/13 13:45	06/27/13 16:04	7440-47-3		
Cobalt, Dissolved	2.7	ug/L	1.0	0.080	1	06/25/13 13:45	06/27/13 16:04	7440-48-4		
Copper, Dissolved	6.8	ug/L	1.0	0.12	1	06/25/13 13:45	06/27/13 16:04	7440-50-8		
Lead, Dissolved	0.046J	ug/L	1.0	0.030	1	06/25/13 13:45	06/27/13 16:04	7439-92-1		
Manganese, Dissolved	1970	ug/L	1.0	0.14	1	06/25/13 13:45	06/27/13 16:04	7439-96-5		
Nickel, Dissolved	3.3	ug/L	1.0	0.070	1	06/25/13 13:45	06/27/13 16:04	7440-02-0		
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	06/25/13 13:45	06/27/13 16:04	7782-49-2		
245.1 Mercury			Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	ND	ug/L	0.20	0.14	1	06/26/13 10:30	06/26/13 13:57	7439-97-6		

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ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60147595

Sample: DR3A1306220400		Lab ID: 60147595002		Collected: 06/22/13 04:00		Received: 06/25/13 10:10		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	06/26/13 10:30	06/26/13 13:35	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	98.0	mg/L	20.0	1.2	1		06/28/13 09:29		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		06/28/13 09:29		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		06/28/13 09:29		
Alkalinity, Total as CaCO ₃	98.0	mg/L	20.0	1.2	1		06/28/13 09:29		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.090	1		06/29/13 17:38	24959-67-9	
Chloride	0.69J	mg/L	1.0	0.50	1		06/29/13 17:38	16887-00-6	
Fluoride	2.4	mg/L	0.20	0.047	1		06/29/13 17:38	16984-48-8	
Sulfate	611	mg/L	100	16.0	100		07/01/13 09:47	14808-79-8	

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ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60147595

Sample: DR3A1306230400			Lab ID: 60147595005		Collected: 06/23/13 04:00		Received: 06/25/13 10:10		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual	
200.7 Metals, Total			Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum	1050	ug/L	75.0	16.6	1	06/25/13 13:45	06/28/13 11:11	7429-90-5		
Calcium	258000	ug/L	100	10.4	1	06/25/13 13:45	06/28/13 11:11	7440-70-2		
Iron	9960	ug/L	50.0	11.6	1	06/25/13 13:45	06/28/13 11:11	7439-89-6		
Lithium	26.7	ug/L	10.0	2.4	1	06/25/13 13:45	06/28/13 11:11	7439-93-2		
Magnesium	21700	ug/L	50.0	6.5	1	06/25/13 13:45	06/28/13 11:11	7439-95-4		
Potassium	4070	ug/L	500	44.4	1	06/25/13 13:45	06/28/13 11:11	7440-09-7		
Silicon	9060	ug/L	500	23.9	1	06/25/13 13:45	06/28/13 11:11	7440-21-3		
Sodium	12700	ug/L	500	21.7	1	06/25/13 13:45	06/28/13 11:11	7440-23-5		
Zinc	4560	ug/L	50.0	3.3	1	06/25/13 13:45	06/28/13 11:11	7440-66-6		
200.7 Metals, Dissolved			Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	64.5J	ug/L	75.0	16.6	1	06/25/13 13:45	06/28/13 10:34	7429-90-5	D9	
Calcium, Dissolved	261000	ug/L	100	10.4	1	06/25/13 13:45	06/28/13 10:34	7440-70-2		
Iron, Dissolved	20.8J	ug/L	50.0	11.6	1	06/25/13 13:45	06/28/13 10:34	7439-89-6		
Lithium, Dissolved	26.0	ug/L	10.0	2.4	1	06/25/13 13:45	06/28/13 10:34	7439-93-2		
Magnesium, Dissolved	21400	ug/L	50.0	6.5	1	06/25/13 13:45	06/28/13 10:34	7439-95-4		
Potassium, Dissolved	3880	ug/L	500	44.4	1	06/25/13 13:45	06/28/13 10:34	7440-09-7		
Silicon, Dissolved	7840	ug/L	500	23.9	1	06/25/13 13:45	06/27/13 14:18	7440-21-3		
Sodium, Dissolved	12300	ug/L	500	21.7	1	06/25/13 13:45	06/28/13 10:34	7440-23-5		
Zinc, Dissolved	3630	ug/L	50.0	3.3	1	06/25/13 13:45	06/27/13 14:18	7440-66-6		
200.8 MET ICPMS			Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Arsenic	1.6	ug/L	1.0	0.050	1	06/25/13 13:45	06/27/13 15:26	7440-38-2	M1	
Cadmium	24.8	ug/L	0.50	0.050	1	06/25/13 13:45	06/27/13 15:26	7440-43-9		
Chromium	0.93J	ug/L	1.0	0.070	1	06/25/13 13:45	06/27/13 15:26	7440-47-3		
Cobalt	2.9	ug/L	1.0	0.080	1	06/25/13 13:45	06/27/13 15:26	7440-48-4		
Copper	228	ug/L	1.0	0.12	1	06/25/13 13:45	06/27/13 15:26	7440-50-8		
Lead	18.1	ug/L	1.0	0.030	1	06/25/13 13:45	06/27/13 15:26	7439-92-1		
Manganese	1980	ug/L	1.0	0.14	1	06/25/13 13:45	06/27/13 15:26	7439-96-5		
Nickel	3.5	ug/L	1.0	0.070	1	06/25/13 13:45	06/27/13 15:26	7440-02-0		
Selenium	0.21J	ug/L	1.0	0.14	1	06/25/13 13:45	06/27/13 15:26	7782-49-2		
200.8 MET ICPMS, Dissolved			Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Arsenic, Dissolved	ND	ug/L	1.0	0.050	1	06/25/13 13:45	06/27/13 16:08	7440-38-2	B M1 D9	
Cadmium, Dissolved	21.4	ug/L	0.50	0.050	1	06/25/13 13:45	06/27/13 16:08	7440-43-9		
Chromium, Dissolved	0.34J	ug/L	1.0	0.070	1	06/25/13 13:45	06/27/13 16:08	7440-47-3		
Cobalt, Dissolved	2.8	ug/L	1.0	0.080	1	06/25/13 13:45	06/27/13 16:08	7440-48-4		
Copper, Dissolved	7.9	ug/L	1.0	0.12	1	06/25/13 13:45	06/27/13 16:08	7440-50-8		
Lead, Dissolved	0.13J	ug/L	1.0	0.030	1	06/25/13 13:45	06/27/13 16:08	7439-92-1		
Manganese, Dissolved	1970	ug/L	1.0	0.14	1	06/25/13 13:45	06/27/13 16:08	7439-96-5		
Nickel, Dissolved	3.7	ug/L	1.0	0.070	1	06/25/13 13:45	06/27/13 16:08	7440-02-0		
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	06/25/13 13:45	06/27/13 16:08	7782-49-2		
245.1 Mercury			Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	ND	ug/L	0.20	0.14	1	06/26/13 10:30	06/26/13 14:00	7439-97-6		

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ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60147595

Sample: DR3A1306230400		Lab ID: 60147595005		Collected: 06/23/13 04:00		Received: 06/25/13 10:10		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	06/26/13 10:30	06/26/13 13:42	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	97.0	mg/L	20.0	1.2	1		06/28/13 09:33		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		06/28/13 09:33		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		06/28/13 09:33		
Alkalinity, Total as CaCO ₃	97.0	mg/L	20.0	1.2	1		06/28/13 09:33		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.090	1		06/29/13 17:53	24959-67-9	
Chloride	0.71J	mg/L	1.0	0.50	1		06/29/13 17:53	16887-00-6	
Fluoride	2.4	mg/L	0.20	0.047	1		06/29/13 17:53	16984-48-8	
Sulfate	617	mg/L	100	16.0	100		07/01/13 10:03	14808-79-8	

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ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60147595

Sample: DR3A1306240400 Lab ID: 60147595008 Collected: 06/24/13 04:00 Received: 06/25/13 10:10 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	952	ug/L	75.0	16.6	1	06/25/13 13:45	06/28/13 11:13	7429-90-5	
Calcium	260000	ug/L	100	10.4	1	06/25/13 13:45	06/28/13 11:13	7440-70-2	
Iron	8940	ug/L	50.0	11.6	1	06/25/13 13:45	06/28/13 11:13	7439-89-6	
Lithium	29.2	ug/L	10.0	2.4	1	06/25/13 13:45	06/28/13 11:13	7439-93-2	
Magnesium	22000	ug/L	50.0	6.5	1	06/25/13 13:45	06/28/13 11:13	7439-95-4	
Potassium	4390	ug/L	500	44.4	1	06/25/13 13:45	06/28/13 11:13	7440-09-7	
Silicon	9050	ug/L	500	23.9	1	06/25/13 13:45	06/28/13 11:13	7440-21-3	
Sodium	14700	ug/L	500	21.7	1	06/25/13 13:45	06/28/13 11:13	7440-23-5	
Zinc	4490	ug/L	50.0	3.3	1	06/25/13 13:45	06/28/13 11:13	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	81.7	ug/L	75.0	16.6	1	06/25/13 13:45	06/28/13 10:37	7429-90-5	
Calcium, Dissolved	260000	ug/L	100	10.4	1	06/25/13 13:45	06/28/13 10:37	7440-70-2	
Iron, Dissolved	17.6J	ug/L	50.0	11.6	1	06/25/13 13:45	06/28/13 10:37	7439-89-6	
Lithium, Dissolved	27.2	ug/L	10.0	2.4	1	06/25/13 13:45	06/28/13 10:37	7439-93-2	
Magnesium, Dissolved	21600	ug/L	50.0	6.5	1	06/25/13 13:45	06/28/13 10:37	7439-95-4	
Potassium, Dissolved	4200	ug/L	500	44.4	1	06/25/13 13:45	06/28/13 10:37	7440-09-7	
Silicon, Dissolved	7770	ug/L	500	23.9	1	06/25/13 13:45	06/27/13 14:20	7440-21-3	
Sodium, Dissolved	14200	ug/L	500	21.7	1	06/25/13 13:45	06/28/13 10:37	7440-23-5	
Zinc, Dissolved	3660	ug/L	50.0	3.3	1	06/25/13 13:45	06/27/13 14:20	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.4	ug/L	1.0	0.050	1	06/25/13 13:45	06/27/13 15:43	7440-38-2	
Cadmium	24.2	ug/L	0.50	0.050	1	06/25/13 13:45	06/27/13 15:43	7440-43-9	
Chromium	1.4	ug/L	1.0	0.070	1	06/25/13 13:45	06/27/13 15:43	7440-47-3	
Cobalt	2.9	ug/L	1.0	0.080	1	06/25/13 13:45	06/27/13 15:43	7440-48-4	
Copper	202	ug/L	1.0	0.12	1	06/25/13 13:45	06/27/13 15:43	7440-50-8	
Lead	15.7	ug/L	1.0	0.030	1	06/25/13 13:45	06/27/13 15:43	7439-92-1	
Manganese	1970	ug/L	1.0	0.14	1	06/25/13 13:45	06/27/13 15:43	7439-96-5	
Nickel	3.5	ug/L	1.0	0.070	1	06/25/13 13:45	06/27/13 15:43	7440-02-0	
Selenium	0.27J	ug/L	1.0	0.14	1	06/25/13 13:45	06/27/13 15:43	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.077J	ug/L	1.0	0.050	1	06/25/13 13:45	06/27/13 16:24	7440-38-2	
Cadmium, Dissolved	20.3	ug/L	0.50	0.050	1	06/25/13 13:45	06/27/13 16:24	7440-43-9	
Chromium, Dissolved	0.74J	ug/L	1.0	0.070	1	06/25/13 13:45	06/27/13 16:24	7440-47-3	
Cobalt, Dissolved	2.6	ug/L	1.0	0.080	1	06/25/13 13:45	06/27/13 16:24	7440-48-4	
Copper, Dissolved	8.5	ug/L	1.0	0.12	1	06/25/13 13:45	06/27/13 16:24	7440-50-8	
Lead, Dissolved	0.060J	ug/L	1.0	0.030	1	06/25/13 13:45	06/27/13 16:24	7439-92-1	B
Manganese, Dissolved	1840	ug/L	1.0	0.14	1	06/25/13 13:45	06/27/13 16:24	7439-96-5	
Nickel, Dissolved	3.1	ug/L	1.0	0.070	1	06/25/13 13:45	06/27/13 16:24	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	06/25/13 13:45	06/27/13 16:24	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	06/26/13 10:30	06/26/13 14:02	7439-97-6	

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ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60147595

Sample: DR3A1306240400		Lab ID: 60147595008		Collected: 06/24/13 04:00		Received: 06/25/13 10:10		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	06/26/13 10:30	06/26/13 13:44	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	99.2	mg/L	20.0	1.2	1		06/28/13 09:42		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		06/28/13 09:42		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		06/28/13 09:42		
Alkalinity, Total as CaCO ₃	99.2	mg/L	20.0	1.2	1		06/28/13 09:42		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.090	1		06/29/13 18:08	24959-67-9	
Chloride	0.62J	mg/L	1.0	0.50	1		06/29/13 18:08	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.047	1		06/29/13 18:08	16984-48-8	
Sulfate	620	mg/L	100	16.0	100		07/01/13 10:18	14808-79-8	

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60147595

QC Batch: MERP/7459 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60147595002, 60147595005, 60147595008

METHOD BLANK: 1211022 Matrix: Water

Associated Lab Samples: 60147595002, 60147595005, 60147595008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	06/26/13 13:46	

LABORATORY CONTROL SAMPLE: 1211023

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.7	94	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1211024 1211025

Parameter	Units	60147625001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.2	4.6	85	92	70-130	8	20	

MATRIX SPIKE SAMPLE: 1211026

Parameter	Units	60147625002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	ND	5	4.6	93	70-130	

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60147595

QC Batch: MERP/7460 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury - Dissolved
Associated Lab Samples: 60147595002, 60147595005, 60147595008

METHOD BLANK: 1211027 Matrix: Water

Associated Lab Samples: 60147595002, 60147595005, 60147595008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	06/26/13 13:31	

LABORATORY CONTROL SAMPLE: 1211028

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	5.2	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1211029 1211030

Parameter	Units	60147595002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury, Dissolved	ug/L	ND	5	5	4.6	4.6	92	93	70-130	0	20	

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60147595

QC Batch: MPRP/23234 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60147595002, 60147595005, 60147595008

METHOD BLANK: 1210659 Matrix: Water

Associated Lab Samples: 60147595002, 60147595005, 60147595008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	06/28/13 11:00	
Calcium	ug/L	ND	100	06/28/13 11:00	
Iron	ug/L	ND	50.0	06/28/13 11:00	
Lithium	ug/L	ND	10.0	06/28/13 11:00	
Magnesium	ug/L	7.9J	50.0	06/28/13 11:00	
Potassium	ug/L	ND	500	06/28/13 11:00	
Silicon	ug/L	ND	500	06/28/13 11:00	
Sodium	ug/L	ND	500	06/28/13 11:00	
Zinc	ug/L	ND	50.0	06/28/13 11:00	

LABORATORY CONTROL SAMPLE: 1210660

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	10100	101	85-115	
Calcium	ug/L	10000	9980	100	85-115	
Iron	ug/L	10000	10200	102	85-115	
Lithium	ug/L	1000	1030	103	85-115	
Magnesium	ug/L	10000	10400	104	85-115	
Potassium	ug/L	10000	10100	101	85-115	
Silicon	ug/L	5000	5090	102	85-115	
Sodium	ug/L	10000	9900	99	85-115	
Zinc	ug/L	1000	1050	105	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1210661 1210662

Parameter	Units	60147595002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	958	10000	10000	10900	11200	99	103	70-130	3	8	
Calcium	ug/L	257000	10000	10000	254000	263000	-28	62	70-130	3	9 M1	
Iron	ug/L	9080	10000	10000	18100	18700	90	96	70-130	3	10	
Lithium	ug/L	26.6	1000	1000	1070	1110	105	108	70-130	3	20	
Magnesium	ug/L	21700	10000	10000	30300	31100	86	94	70-130	3	9	
Potassium	ug/L	3930	10000	10000	14000	14500	101	105	70-130	3	7	
Silicon	ug/L	8940	5000	5000	13500	13900	91	99	70-130	3	5	
Sodium	ug/L	12300	10000	10000	22000	23000	98	107	70-130	4	8	
Zinc	ug/L	4560	1000	1000	5180	5340	62	78	70-130	3	11 M1	

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60147595

QC Batch:	MPRP/23232	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Dissolved
Associated Lab Samples:	60147595002, 60147595005, 60147595008		

METHOD BLANK: 1210651 Matrix: Water

Associated Lab Samples: 60147595002, 60147595005, 60147595008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	06/28/13 10:21	
Calcium, Dissolved	ug/L	ND	100	06/28/13 10:21	
Iron, Dissolved	ug/L	ND	50.0	06/28/13 10:21	
Lithium, Dissolved	ug/L	ND	10.0	06/28/13 10:21	
Magnesium, Dissolved	ug/L	ND	50.0	06/28/13 10:21	
Potassium, Dissolved	ug/L	ND	500	06/28/13 10:21	
Silicon, Dissolved	ug/L	38.4J	500	06/27/13 14:00	
Sodium, Dissolved	ug/L	ND	500	06/28/13 10:21	
Zinc, Dissolved	ug/L	ND	50.0	06/27/13 14:00	

LABORATORY CONTROL SAMPLE: 1210652

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	10400	104	85-115	
Calcium, Dissolved	ug/L	10000	10500	105	85-115	
Iron, Dissolved	ug/L	10000	10500	105	85-115	
Lithium, Dissolved	ug/L	1000	1050	105	85-115	
Magnesium, Dissolved	ug/L	10000	10600	106	85-115	
Potassium, Dissolved	ug/L	10000	10200	102	85-115	
Silicon, Dissolved	ug/L	5000	5220	104	85-115	
Sodium, Dissolved	ug/L	10000	10100	101	85-115	
Zinc, Dissolved	ug/L	1000	1040	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1210653 1210654

Parameter	Units	60147595002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	66.8J	10000	10000	10300	10400	102	103	70-130	1	8	
Calcium, Dissolved	ug/L	260000	10000	10000	265000	276000	52	155	70-130	4	9	M1
Iron, Dissolved	ug/L	17.6J	10000	10000	9910	10100	99	101	70-130	2	10	
Lithium, Dissolved	ug/L	25.2	1000	1000	1070	1080	104	105	70-130	1	20	
Magnesium, Dissolved	ug/L	21300	10000	10000	30500	31500	92	102	70-130	3	9	
Potassium, Dissolved	ug/L	3780	10000	10000	14100	14300	104	105	70-130	1	7	
Silicon, Dissolved	ug/L	7980	5000	5000	12900	13400	98	108	70-130	4	5	
Sodium, Dissolved	ug/L	11800	10000	10000	22000	22400	102	106	70-130	2	8	
Zinc, Dissolved	ug/L	3730	1000	1000	4560	4520	83	78	70-130	1	11	

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60147595

QC Batch: MPRP/23235 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60147595002, 60147595005, 60147595008

METHOD BLANK: 1210663 Matrix: Water

Associated Lab Samples: 60147595002, 60147595005, 60147595008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	06/27/13 15:14	
Cadmium	ug/L	ND	0.50	06/27/13 15:14	
Chromium	ug/L	ND	1.0	06/27/13 15:14	
Cobalt	ug/L	ND	1.0	06/27/13 15:14	
Copper	ug/L	0.20J	1.0	06/27/13 15:14	
Lead	ug/L	ND	1.0	06/27/13 15:14	
Manganese	ug/L	0.21J	1.0	06/27/13 15:14	
Nickel	ug/L	0.082J	1.0	06/27/13 15:14	
Selenium	ug/L	ND	1.0	06/27/13 15:14	

LABORATORY CONTROL SAMPLE: 1210664

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	41.5	104	85-115	
Cadmium	ug/L	40	41.2	103	85-115	
Chromium	ug/L	40	42.1	105	85-115	
Cobalt	ug/L	40	41.0	102	85-115	
Copper	ug/L	40	41.8	105	85-115	
Lead	ug/L	40	40.1	100	85-115	
Manganese	ug/L	40	40.9	102	85-115	
Nickel	ug/L	40	41.5	104	85-115	
Selenium	ug/L	40	40.4	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1210665 1210666

Parameter	Units	60147595005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	1.6	40	40	43.8	43.4	106	105	70-130	1	20	
Cadmium	ug/L	24.8	40	40	66.0	64.2	103	98	70-130	3	20	
Chromium	ug/L	0.93J	40	40	41.9	41.7	102	102	70-130	1	20	
Cobalt	ug/L	2.9	40	40	43.2	42.8	101	100	70-130	1	20	
Copper	ug/L	228	40	40	276	262	119	83	70-130	5	20	
Lead	ug/L	18.1	40	40	59.5	58.0	103	100	70-130	3	20	
Manganese	ug/L	1980	40	40	2100	1960	288	-58	70-130	7	20 M1	
Nickel	ug/L	3.5	40	40	43.4	43.6	100	100	70-130	0	20	
Selenium	ug/L	0.21J	40	40	40.7	39.9	101	99	70-130	2	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60147595

QC Batch: MPRP/23233 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60147595002, 60147595005, 60147595008

METHOD BLANK: 1210655 Matrix: Water

Associated Lab Samples: 60147595002, 60147595005, 60147595008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	06/27/13 15:55	
Cadmium, Dissolved	ug/L	ND	0.50	06/27/13 15:55	
Chromium, Dissolved	ug/L	ND	1.0	06/27/13 15:55	
Cobalt, Dissolved	ug/L	ND	1.0	06/27/13 15:55	
Copper, Dissolved	ug/L	0.39J	1.0	06/27/13 15:55	
Lead, Dissolved	ug/L	0.039J	1.0	06/27/13 15:55	
Manganese, Dissolved	ug/L	0.53J	1.0	06/27/13 15:55	
Nickel, Dissolved	ug/L	0.21J	1.0	06/27/13 15:55	
Selenium, Dissolved	ug/L	ND	1.0	06/27/13 15:55	

LABORATORY CONTROL SAMPLE: 1210656

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	42.0	105	85-115	
Cadmium, Dissolved	ug/L	40	42.3	106	85-115	
Chromium, Dissolved	ug/L	40	42.8	107	85-115	
Cobalt, Dissolved	ug/L	40	42.1	105	85-115	
Copper, Dissolved	ug/L	40	43.1	108	85-115	
Lead, Dissolved	ug/L	40	41.4	104	85-115	
Manganese, Dissolved	ug/L	40	42.2	106	85-115	
Nickel, Dissolved	ug/L	40	43.2	108	85-115	
Selenium, Dissolved	ug/L	40	41.1	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1210657 1210658

Parameter	Units	60147595005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	ND	40	40	44.5	42.3	111	106	70-130	5	20	
Cadmium, Dissolved	ug/L	21.4	40	40	62.7	60.1	103	97	70-130	4	20	
Chromium, Dissolved	ug/L	0.34J	40	40	42.5	40.3	105	100	70-130	5	20	
Cobalt, Dissolved	ug/L	2.8	40	40	43.6	41.9	102	98	70-130	4	20	
Copper, Dissolved	ug/L	7.9	40	40	47.8	46.0	100	95	70-130	4	20	
Lead, Dissolved	ug/L	0.13J	40	40	41.2	39.7	103	99	70-130	4	20	
Manganese, Dissolved	ug/L	1970	40	40	2030	1900	142	-175	70-130	6	20 M1	
Nickel, Dissolved	ug/L	3.7	40	40	44.1	41.8	101	95	70-130	5	20	
Selenium, Dissolved	ug/L	ND	40	40	41.4	41.2	103	103	70-130	1	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60147595

QC Batch: WET/42100 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60147595002, 60147595005, 60147595008

METHOD BLANK: 1212381 Matrix: Water

Associated Lab Samples: 60147595002, 60147595005, 60147595008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	06/28/13 09:25	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	06/28/13 09:25	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	06/28/13 09:25	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	06/28/13 09:25	

LABORATORY CONTROL SAMPLE: 1212382

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	489	98	90-110	

SAMPLE DUPLICATE: 1212385

Parameter	Units	60147595005 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	97.0	96.7	0	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	97.0	96.7	0	10	

SAMPLE DUPLICATE: 1212386

Parameter	Units	60147476006 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	52.7	54.6	3	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	52.7	54.6	3	10	

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60147595

QC Batch: WETA/25291 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60147595002, 60147595005, 60147595008

METHOD BLANK: 1213568 Matrix: Water

Associated Lab Samples: 60147595002, 60147595005, 60147595008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	06/29/13 13:31	
Chloride	mg/L	ND	1.0	06/29/13 13:31	
Fluoride	mg/L	ND	0.20	06/29/13 13:31	

METHOD BLANK: 1213962 Matrix: Water

Associated Lab Samples: 60147595002, 60147595005, 60147595008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.0	07/01/13 09:01	

LABORATORY CONTROL SAMPLE: 1213569

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.0	100	90-110	
Chloride	mg/L	5	4.9	98	90-110	
Fluoride	mg/L	2.5	2.6	103	90-110	

LABORATORY CONTROL SAMPLE: 1213963

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	4.9	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1213570 1213571

Parameter	Units	60147372006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Bromide	mg/L	ND	10	10	10	10.2	100	102	75-119	2	10
Chloride	mg/L	2.4	10	10	11.8	11.9	93	95	64-118	1	12
Fluoride	mg/L	ND	5	5	5.4	5.5	106	107	75-110	1	10
Sulfate	mg/L	16.7	10	10	27.2	26.9	105	101	61-119	1	10

MATRIX SPIKE SAMPLE: 1213572

Parameter	Units	60147260001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	5	5.4	109	75-119	

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60147595

MATRIX SPIKE SAMPLE:		1213572					
Parameter	Units	60147260001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	178	100	263	85	64-118	
Fluoride	mg/L	0.67	2.5	3.2	100	75-110	
Sulfate	mg/L	144	100	232	89	61-119	

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QUALIFIERS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60147595

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60147595

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60147595002	DR3A1306220400	EPA 200.7	MPRP/23234	EPA 200.7	ICP/18314
60147595005	DR3A1306230400	EPA 200.7	MPRP/23234	EPA 200.7	ICP/18314
60147595008	DR3A1306240400	EPA 200.7	MPRP/23234	EPA 200.7	ICP/18314
60147595002	DR3A1306220400	EPA 200.7	MPRP/23232	EPA 200.7	ICP/18313
60147595005	DR3A1306230400	EPA 200.7	MPRP/23232	EPA 200.7	ICP/18313
60147595008	DR3A1306240400	EPA 200.7	MPRP/23232	EPA 200.7	ICP/18313
60147595002	DR3A1306220400	EPA 200.8	MPRP/23235	EPA 200.8	ICPM/2353
60147595005	DR3A1306230400	EPA 200.8	MPRP/23235	EPA 200.8	ICPM/2353
60147595008	DR3A1306240400	EPA 200.8	MPRP/23235	EPA 200.8	ICPM/2353
60147595002	DR3A1306220400	EPA 200.8	MPRP/23233	EPA 200.8	ICPM/2352
60147595005	DR3A1306230400	EPA 200.8	MPRP/23233	EPA 200.8	ICPM/2352
60147595008	DR3A1306240400	EPA 200.8	MPRP/23233	EPA 200.8	ICPM/2352
60147595002	DR3A1306220400	EPA 245.1	MERP/7459	EPA 245.1	MERC/7418
60147595005	DR3A1306230400	EPA 245.1	MERP/7459	EPA 245.1	MERC/7418
60147595008	DR3A1306240400	EPA 245.1	MERP/7459	EPA 245.1	MERC/7418
60147595002	DR3A1306220400	EPA 245.1	MERP/7460	EPA 245.1	MERC/7416
60147595005	DR3A1306230400	EPA 245.1	MERP/7460	EPA 245.1	MERC/7416
60147595008	DR3A1306240400	EPA 245.1	MERP/7460	EPA 245.1	MERC/7416
60147595002	DR3A1306220400	SM 2320B	WET/42100		
60147595005	DR3A1306230400	SM 2320B	WET/42100		
60147595008	DR3A1306240400	SM 2320B	WET/42100		
60147595002	DR3A1306220400	EPA 300.0	WETA/25291		
60147595005	DR3A1306230400	EPA 300.0	WETA/25291		
60147595008	DR3A1306240400	EPA 300.0	WETA/25291		

REPORT OF LABORATORY ANALYSIS

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WO#: 60147595



60147595



Sample Condition Upon Receipt
ESI Tech Spec Client

Client Name: BP AMEC

Courier: ☒ UPS M ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 1Z 733 W87 22 1006 0336

Pace Shipping Label Used? Yes ☒ No ☐

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☒ 12P/C

Thermometer Used: T-112 / T-194

Type of Ice: Wet Blue ☐ None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 5.0/2.8

Date and initials of person examining contents: RG/25/13

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Includes date/time/ID/analyses	Matrix: <u>WT</u>	15.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	16.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	17.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		18.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	19.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	20. List State:

Client Notification/ Resolution:

Copy COC to Client? Y / ☒ N

Field Data Required? Y / N

Person Contacted: Lynda Lombardi Date/Time: 6/25/13

Comments/ Resolution: Email - split hold samples into separate

project - RMW 6/25/13

Project Manager Review: RMW

Date: 6/25/13

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: <u>1020</u>	Start:
End: <u>1030</u>	End:
Temp:	Temp:



Laboratory Management Program LaMP Chain of Custody Record

Page 1 of 1BP/ARC Project Name: Rico-Argentine Mine SiteReq Due Date (mm/dd/yy): _____ Rush TAT: Yes X No _____

BP/ARC Facility No: _____

Lab Work Order Number: _____

Lab Name: Pace Analytical Laboratories, Inc.				BP/ARC Facility Address: Rico-Argentine Mine				Consultant/Contractor: AMEC E&I, Inc.													
Lab Address: 9608 Loiret Blvd., Lenexa, KS 66219				City, State, ZIP Code: Rico, Colorado				Consultant/Contractor Project No: SA11161313.300H													
Lab PM: Heather Wilson				Lead Regulatory Agency: U.S. EPA Region 8				Address: 10670 White Rock Road, Suite 100, Rancho Cordova, CA													
Lab Phone: (913) 563-1407				California Global ID No.: NA				Consultant/Contractor PM: Marc Lombardi													
Lab Shipping Acct: UPS # 733W87				Enfos Proposal No: D00LL-0010 WR 268494				Phone: 916-636-3200													
Lab Bottle Order No: NA				Accounting Mode: Provision <u>X</u> OOC-BU _____ OOC-RM _____				Email Report/EDD To: lynda.lombardi@amec.com													
Other Info: 2013 517 Injection Treatability Study				Stage: 4-Execute Activity: Spend				Invoice To: BP/ARC <u>X</u> Contractor _____													
BP/ARC EBM: Anthony Brown				Matrix		No. Containers / Preservative		Requested Analyses						Report Type & QC Level							
EBM Phone: 714-228-6770														Standard <u>X</u>							
EBM Email: anthony.brown@bp.com														Full Data Package _____							
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Methanol	Tot Metals-see notes (E200.7/200.8/E245.1)	Dis Metals-see notes (E200.7/200.8/E245.1)	Alkalinity-Total HCO ₃ , CO ₃ , OH (SM2320B)	Bromide (E300.0)	Chloride (E300.0)	Fluoride (E300.0)	Sulfate (E300.0)	Comments	
	DR3A1306212000	6/21/13	2000	X			3	1	0	2	0	0	X	X	X	X	X	X	X	X	Dissolved metals samples are field filtered
	DR3A1306220400	6/22/13	0400	X			3	1	0	2	0	0	X	X	X	X	X	X	X	X	
	DR3A1306221200	6/22/13	1200	X			3	1	0	2	0	0	X	X	X	X	X	X	X	X	Metals are: Al, Ca, Fe, K, Li, Na, Mg, Si,
	DR3A1306222000	6/22/13	2000	X			3	1	0	2	0	0	X	X	X	X	X	X	X	X	Zn (E200.7); As, Cd, Co, Cr, Cu, Mn, Ni,
	DR3A1306230400	6/23/13	0400	X			3	1	0	2	0	0	X	X	X	X	X	X	X	X	Pb, Se (E200.8); and Hg (E245.1)
	DR3A1306231200	6/23/13	1200	X			3	1	0	2	0	0	X	X	X	X	X	X	X	X	
	DR3A1306232000	6/23/13	2000	X			3	1	0	2	0	0	X	X	X	X	X	X	X	X	
	DR3A1306240400	6/24/13	0400	X			3	1	0	2	0	0	X	X	X	X	X	X	X	X	RUSH 5-day TAT
Sampler's Name: <u>ABBY CAZIRE</u>				Relinquished By / Affiliation: <u>ABBY & AMEC</u>				Date: <u>6/24/13</u>		Time: <u>1400</u>		Accepted By / Affiliation: <u>PAUSE</u>				Date: <u>6/25/13</u>		Time: <u>1010</u>			
Sampler's Company: <u>AMEC</u>																					
Shipment Method: <u>UPS</u> Ship Date: <u>6/24/13</u>																					
Shipment Tracking No: <u>1E733W872210060322</u>																					
Special Instructions:																					
THIS LINE - LAB USE ONLY: Custody Seals In Place: <u>Yes</u> / No				Temp Blank: <u>Yes</u> / No				Cooler Temp on Receipt: <u>5.0</u> <u>2.0</u> °F/C				Trip Blank: <u>Yes</u> / <u>No</u>				MS/MSD Sample Submitted: <u>Yes</u> / <u>No</u>					

July 05, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: Rico-Argentine Mine Site
Pace Project No.: 60147801

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on June 27, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Rico-Argentine Mine Site

Pace Project No.: 60147801

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

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SAMPLE SUMMARY

Project: Rico-Argentine Mine Site

Pace Project No.: 60147801

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60147801001	DR3A1306250400	Water	06/25/13 04:00	06/27/13 10:20
60147801002	DR3A1306260400	Water	06/26/13 04:00	06/27/13 10:20

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SAMPLE ANALYTE COUNT

Project: Rico-Argentine Mine Site

Pace Project No.: 60147801

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60147801001	DR3A1306250400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	TDS	1
		EPA 245.1	TDS	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60147801002	DR3A1306260400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	TDS	1
		EPA 245.1	TDS	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60147801

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: July 05, 2013

General Information:

2 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23275

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60147781001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1212513)
 - Calcium
 - Sodium
- MSD (Lab ID: 1212514)
 - Calcium
 - Sodium

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60147801

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: July 05, 2013

General Information:

2 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23278

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60147801001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1212526)
 - Calcium, Dissolved
- MSD (Lab ID: 1212527)
 - Calcium, Dissolved

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60147801

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: July 05, 2013

General Information:

2 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23280

B: Analyte was detected in the associated method blank.

- BLANK for HBN 296807 [MPRP/232 (Lab ID: 1212532)]
- Chromium

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60147801

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: July 05, 2013

General Information:

2 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23279

B: Analyte was detected in the associated method blank.

- BLANK for HBN 296806 [MPRP/232 (Lab ID: 1212528)
- Lead, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23279

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60147801002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1212530)
 - Manganese, Dissolved
- MSD (Lab ID: 1212531)
 - Manganese, Dissolved

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60147801

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: July 05, 2013

General Information:

2 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60147801

Method: EPA 245.1
Description: 245.1 Mercury, Dissolved
Client: BP AMEC
Date: July 05, 2013

General Information:

2 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60147801

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: July 05, 2013

General Information:

2 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60147801

Method: EPA 300.0
Description: 300.0 IC Anions 28 Days
Client: BP AMEC
Date: July 05, 2013

General Information:

2 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60147801

Sample: DR3A1306250400 Lab ID: 60147801001 Collected: 06/25/13 04:00 Received: 06/27/13 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	933	ug/L	75.0	16.6	1	06/28/13 08:45	07/05/13 09:44	7429-90-5	
Calcium	259000	ug/L	100	10.4	1	06/28/13 08:45	07/05/13 09:44	7440-70-2	
Iron	9120	ug/L	50.0	11.6	1	06/28/13 08:45	07/05/13 09:44	7439-89-6	
Lithium	28.8	ug/L	10.0	2.4	1	06/28/13 08:45	07/05/13 09:44	7439-93-2	
Magnesium	19900	ug/L	50.0	6.5	1	06/28/13 08:45	07/05/13 09:44	7439-95-4	
Potassium	4540	ug/L	500	44.4	1	06/28/13 08:45	07/05/13 09:44	7440-09-7	
Silicon	8700	ug/L	500	23.9	1	06/28/13 08:45	07/05/13 09:44	7440-21-3	
Sodium	17200	ug/L	500	21.7	1	06/28/13 08:45	07/05/13 09:44	7440-23-5	
Zinc	4410	ug/L	50.0	3.3	1	06/28/13 08:45	07/05/13 09:44	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	59.4J	ug/L	75.0	16.6	1	06/28/13 08:45	07/05/13 10:25	7429-90-5	
Calcium, Dissolved	255000	ug/L	100	10.4	1	06/28/13 08:45	07/05/13 10:25	7440-70-2	M1
Iron, Dissolved	ND	ug/L	50.0	11.6	1	06/28/13 08:45	07/05/13 10:25	7439-89-6	
Lithium, Dissolved	26.5	ug/L	10.0	2.4	1	06/28/13 08:45	07/05/13 10:25	7439-93-2	
Magnesium, Dissolved	20000	ug/L	50.0	6.5	1	06/28/13 08:45	07/05/13 10:25	7439-95-4	D9
Potassium, Dissolved	4390	ug/L	500	44.4	1	06/28/13 08:45	07/05/13 10:25	7440-09-7	
Silicon, Dissolved	7690	ug/L	500	23.9	1	06/28/13 08:45	07/05/13 10:25	7440-21-3	
Sodium, Dissolved	16500	ug/L	500	21.7	1	06/28/13 08:45	07/05/13 10:25	7440-23-5	
Zinc, Dissolved	3890	ug/L	50.0	3.3	1	06/28/13 08:45	07/05/13 10:25	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.3	ug/L	1.0	0.050	1	06/28/13 08:45	07/02/13 14:42	7440-38-2	
Cadmium	23.2	ug/L	0.50	0.050	1	06/28/13 08:45	07/02/13 14:42	7440-43-9	
Chromium	0.95J	ug/L	1.0	0.070	1	06/28/13 08:45	07/02/13 14:42	7440-47-3	B
Cobalt	2.6	ug/L	1.0	0.080	1	06/28/13 08:45	07/02/13 14:42	7440-48-4	
Copper	182	ug/L	1.0	0.12	1	06/28/13 08:45	07/02/13 14:42	7440-50-8	
Lead	15.0	ug/L	1.0	0.030	1	06/28/13 08:45	07/02/13 14:42	7439-92-1	
Manganese	1930	ug/L	1.0	0.14	1	06/28/13 08:45	07/02/13 14:42	7439-96-5	
Nickel	4.1	ug/L	1.0	0.070	1	06/28/13 08:45	07/02/13 14:42	7440-02-0	
Selenium	ND	ug/L	1.0	0.14	1	06/28/13 08:45	07/02/13 14:42	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	1.0	0.050	1	06/28/13 08:45	07/02/13 13:29	7440-38-2	
Cadmium, Dissolved	20.2	ug/L	0.50	0.050	1	06/28/13 08:45	07/02/13 13:29	7440-43-9	
Chromium, Dissolved	0.95J	ug/L	1.0	0.070	1	06/28/13 08:45	07/02/13 13:29	7440-47-3	
Cobalt, Dissolved	2.7	ug/L	1.0	0.080	1	06/28/13 08:45	07/02/13 13:29	7440-48-4	D9
Copper, Dissolved	7.4	ug/L	1.0	0.12	1	06/28/13 08:45	07/02/13 13:29	7440-50-8	
Lead, Dissolved	0.12J	ug/L	1.0	0.030	1	06/28/13 08:45	07/02/13 13:29	7439-92-1	B
Manganese, Dissolved	1940	ug/L	1.0	0.14	1	06/28/13 08:45	07/02/13 13:29	7439-96-5	D9
Nickel, Dissolved	4.5	ug/L	1.0	0.070	1	06/28/13 08:45	07/02/13 13:29	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	06/28/13 08:45	07/02/13 13:29	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/01/13 14:30	07/02/13 14:32	7439-97-6	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60147801

Sample: DR3A1306250400		Lab ID: 60147801001		Collected: 06/25/13 04:00		Received: 06/27/13 10:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND ug/L		0.20	0.14	1	07/01/13 14:30	07/02/13 15:52	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	93.5 mg/L		20.0	1.2	1		07/01/13 12:28		
Alkalinity, Carbonate (CaCO ₃)	ND mg/L		20.0	1.2	1		07/01/13 12:28		
Alkalinity, Hydroxide (CaCO ₃)	ND mg/L		20.0	1.2	1		07/01/13 12:28		
Alkalinity, Total as CaCO ₃	93.5 mg/L		20.0	1.2	1		07/01/13 12:28		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND mg/L		1.0	0.090	1		07/02/13 18:31	24959-67-9	
Chloride	0.70J mg/L		1.0	0.50	1		07/02/13 18:31	16887-00-6	
Fluoride	2.5 mg/L		0.20	0.047	1		07/02/13 18:31	16984-48-8	
Sulfate	779 mg/L		100	16.0	100		07/02/13 18:46	14808-79-8	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60147801

Sample: DR3A1306260400 Lab ID: 60147801002 Collected: 06/26/13 04:00 Received: 06/27/13 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	907	ug/L	75.0	16.6	1	06/28/13 08:45	07/05/13 10:03	7429-90-5	
Calcium	265000	ug/L	100	10.4	1	06/28/13 08:45	07/05/13 10:03	7440-70-2	
Iron	8980	ug/L	50.0	11.6	1	06/28/13 08:45	07/05/13 10:03	7439-89-6	
Lithium	27.1	ug/L	10.0	2.4	1	06/28/13 08:45	07/05/13 10:03	7439-93-2	
Magnesium	20700	ug/L	50.0	6.5	1	06/28/13 08:45	07/05/13 10:03	7439-95-4	
Potassium	4450	ug/L	500	44.4	1	06/28/13 08:45	07/05/13 10:03	7440-09-7	
Silicon	8910	ug/L	500	23.9	1	06/28/13 08:45	07/05/13 10:03	7440-21-3	
Sodium	18300	ug/L	500	21.7	1	06/28/13 08:45	07/05/13 10:03	7440-23-5	
Zinc	4360	ug/L	50.0	3.3	1	06/28/13 08:45	07/05/13 10:03	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	67.0J	ug/L	75.0	16.6	1	06/28/13 08:45	07/05/13 10:37	7429-90-5	
Calcium, Dissolved	258000	ug/L	100	10.4	1	06/28/13 08:45	07/05/13 10:37	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	11.6	1	06/28/13 08:45	07/05/13 10:37	7439-89-6	
Lithium, Dissolved	27.1	ug/L	10.0	2.4	1	06/28/13 08:45	07/05/13 10:37	7439-93-2	
Magnesium, Dissolved	20900	ug/L	50.0	6.5	1	06/28/13 08:45	07/05/13 10:37	7439-95-4	D9
Potassium, Dissolved	4420	ug/L	500	44.4	1	06/28/13 08:45	07/05/13 10:37	7440-09-7	
Silicon, Dissolved	7850	ug/L	500	23.9	1	06/28/13 08:45	07/05/13 10:37	7440-21-3	
Sodium, Dissolved	17900	ug/L	500	21.7	1	06/28/13 08:45	07/05/13 10:37	7440-23-5	
Zinc, Dissolved	3930	ug/L	50.0	3.3	1	06/28/13 08:45	07/05/13 10:37	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.3	ug/L	1.0	0.050	1	06/28/13 08:45	07/02/13 14:59	7440-38-2	
Cadmium	22.9	ug/L	0.50	0.050	1	06/28/13 08:45	07/02/13 14:59	7440-43-9	
Chromium	0.95J	ug/L	1.0	0.070	1	06/28/13 08:45	07/02/13 14:59	7440-47-3	B
Cobalt	2.7	ug/L	1.0	0.080	1	06/28/13 08:45	07/02/13 14:59	7440-48-4	
Copper	181	ug/L	1.0	0.12	1	06/28/13 08:45	07/02/13 14:59	7440-50-8	
Lead	14.5	ug/L	1.0	0.030	1	06/28/13 08:45	07/02/13 14:59	7439-92-1	
Manganese	1940	ug/L	1.0	0.14	1	06/28/13 08:45	07/02/13 14:59	7439-96-5	
Nickel	4.2	ug/L	1.0	0.070	1	06/28/13 08:45	07/02/13 14:59	7440-02-0	
Selenium	ND	ug/L	1.0	0.14	1	06/28/13 08:45	07/02/13 14:59	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	1.0	0.050	1	06/28/13 08:45	07/02/13 13:33	7440-38-2	
Cadmium, Dissolved	19.4	ug/L	0.50	0.050	1	06/28/13 08:45	07/02/13 13:33	7440-43-9	
Chromium, Dissolved	0.30J	ug/L	1.0	0.070	1	06/28/13 08:45	07/02/13 13:33	7440-47-3	
Cobalt, Dissolved	2.5	ug/L	1.0	0.080	1	06/28/13 08:45	07/02/13 13:33	7440-48-4	
Copper, Dissolved	7.5	ug/L	1.0	0.12	1	06/28/13 08:45	07/02/13 13:33	7440-50-8	
Lead, Dissolved	0.14J	ug/L	1.0	0.030	1	06/28/13 08:45	07/02/13 13:33	7439-92-1	B
Manganese, Dissolved	1850	ug/L	1.0	0.14	1	06/28/13 08:45	07/02/13 13:33	7439-96-5	M1
Nickel, Dissolved	4.3	ug/L	1.0	0.070	1	06/28/13 08:45	07/02/13 13:33	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	06/28/13 08:45	07/02/13 13:33	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/01/13 14:30	07/02/13 14:35	7439-97-6	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60147801

Sample: DR3A1306260400 Lab ID: 60147801002 Collected: 06/26/13 04:00 Received: 06/27/13 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/01/13 14:30	07/02/13 16:03	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	90.5	mg/L	20.0	1.2	1		07/01/13 12:36		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/01/13 12:36		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/01/13 12:36		
Alkalinity, Total as CaCO ₃	90.5	mg/L	20.0	1.2	1		07/01/13 12:36		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	ND	mg/L	1.0	0.090	1		07/02/13 19:02	24959-67-9	
Chloride	0.67J	mg/L	1.0	0.50	1		07/02/13 19:02	16887-00-6	
Fluoride	2.3	mg/L	0.20	0.047	1		07/02/13 19:02	16984-48-8	
Sulfate	761	mg/L	100	16.0	100		07/02/13 19:17	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60147801

QC Batch: MERP/7472

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury

Associated Lab Samples: 60147801001, 60147801002

METHOD BLANK: 1214106

Matrix: Water

Associated Lab Samples: 60147801001, 60147801002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	07/02/13 14:17	

LABORATORY CONTROL SAMPLE: 1214107

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.0	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1214108 1214109

Parameter	Units	60147781001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.9	5.3	99	105	70-130	6	20	

MATRIX SPIKE SAMPLE: 1214110

Parameter	Units	60147801001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	ND	5	4.8	96	70-130	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60147801

QC Batch:	MERP/7471	Analysis Method:	EPA 245.1
QC Batch Method:	EPA 245.1	Analysis Description:	245.1 Mercury - Dissolved
Associated Lab Samples:	60147801001, 60147801002		

METHOD BLANK: 1214098 Matrix: Water

Associated Lab Samples: 60147801001, 60147801002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	07/02/13 15:47	

LABORATORY CONTROL SAMPLE: 1214099

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	5.5	110	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1214100 1214101

Parameter	Units	60147801001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury, Dissolved	ug/L	ND	5	5	5.2	5.2	104	103	70-130	1	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60147801

QC Batch: MPRP/23275

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60147801001, 60147801002

METHOD BLANK: 1212511

Matrix: Water

Associated Lab Samples: 60147801001, 60147801002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	07/05/13 10:00	
Calcium	ug/L	ND	100	07/05/13 10:00	
Iron	ug/L	27.5J	50.0	07/05/13 10:00	
Lithium	ug/L	ND	10.0	07/05/13 10:00	
Magnesium	ug/L	ND	50.0	07/05/13 10:00	
Potassium	ug/L	59.7J	500	07/05/13 10:00	
Silicon	ug/L	ND	500	07/05/13 10:00	
Sodium	ug/L	210J	500	07/05/13 10:00	
Zinc	ug/L	ND	50.0	07/05/13 10:00	

LABORATORY CONTROL SAMPLE: 1212512

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	9770	98	85-115	
Calcium	ug/L	10000	9760	98	85-115	
Iron	ug/L	10000	9760	98	85-115	
Lithium	ug/L	1000	976	98	85-115	
Magnesium	ug/L	10000	9460	95	85-115	
Potassium	ug/L	10000	9620	96	85-115	
Silicon	ug/L	5000	4840	97	85-115	
Sodium	ug/L	10000	9740	97	85-115	
Zinc	ug/L	1000	987	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1212513

1212514

Parameter	Units	60147781001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	118	10000	10000	11000	10800	108	106	70-130	2	8	
Calcium	ug/L	28000	10000	10000	41800	41100	138	131	70-130	2	9 M1	
Iron	ug/L	522	10000	10000	11500	11300	110	107	70-130	2	10	
Lithium	ug/L	ND	1000	1000	1120	1090	112	108	70-130	3	20	
Magnesium	ug/L	4890	10000	10000	15400	15300	105	104	70-130	1	9	
Potassium	ug/L	4110	10000	10000	16000	15800	119	117	70-130	1	7	
Silicon	ug/L	1130	5000	5000	6760	6610	113	110	70-130	2	5	
Sodium	ug/L	697000	10000	10000	763000	752000	658	550	70-130	1	8 M1	
Zinc	ug/L	ND	1000	1000	1120	1130	109	109	70-130	1	11	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60147801

QC Batch: MPRP/23278

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60147801001, 60147801002

METHOD BLANK: 1212524

Matrix: Water

Associated Lab Samples: 60147801001, 60147801002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	07/05/13 10:19	
Calcium, Dissolved	ug/L	ND	100	07/05/13 10:19	
Iron, Dissolved	ug/L	ND	50.0	07/05/13 10:19	
Lithium, Dissolved	ug/L	ND	10.0	07/05/13 10:19	
Magnesium, Dissolved	ug/L	ND	50.0	07/05/13 10:19	
Potassium, Dissolved	ug/L	51.2J	500	07/05/13 10:19	
Silicon, Dissolved	ug/L	ND	500	07/05/13 10:19	
Sodium, Dissolved	ug/L	128J	500	07/05/13 10:19	
Zinc, Dissolved	ug/L	ND	50.0	07/05/13 10:19	

LABORATORY CONTROL SAMPLE: 1212525

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	9980	100	85-115	
Calcium, Dissolved	ug/L	10000	9720	97	85-115	
Iron, Dissolved	ug/L	10000	9950	99	85-115	
Lithium, Dissolved	ug/L	1000	1010	101	85-115	
Magnesium, Dissolved	ug/L	10000	9140	91	85-115	
Potassium, Dissolved	ug/L	10000	10000	100	85-115	
Silicon, Dissolved	ug/L	5000	4780	96	85-115	
Sodium, Dissolved	ug/L	10000	10200	102	85-115	
Zinc, Dissolved	ug/L	1000	984	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1212526

1212527

Parameter	Units	60147801001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	59.4J	10000	10000	10900	10700	108	107	70-130	1	8	
Calcium, Dissolved	ug/L	255000	10000	10000	271000	272000	163	173	70-130	0	9 M1	
Iron, Dissolved	ug/L	ND	10000	10000	10600	10500	106	105	70-130	1	10	
Lithium, Dissolved	ug/L	26.5	1000	1000	1130	1120	111	109	70-130	2	20	
Magnesium, Dissolved	ug/L	20000	10000	10000	30900	30600	110	106	70-130	1	9	
Potassium, Dissolved	ug/L	4390	10000	10000	15500	15400	111	110	70-130	1	7	
Silicon, Dissolved	ug/L	7690	5000	5000	13100	13100	108	108	70-130	0	5	
Sodium, Dissolved	ug/L	16500	10000	10000	27800	27500	112	110	70-130	1	8	
Zinc, Dissolved	ug/L	3890	1000	1000	4960	4990	107	110	70-130	0	11	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60147801

QC Batch: MPRP/23280 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60147801001, 60147801002

METHOD BLANK: 1212532 Matrix: Water

Associated Lab Samples: 60147801001, 60147801002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	07/02/13 14:34	
Cadmium	ug/L	ND	0.50	07/02/13 14:34	
Chromium	ug/L	0.85J	1.0	07/02/13 14:34	
Cobalt	ug/L	ND	1.0	07/02/13 14:34	
Copper	ug/L	0.90J	1.0	07/02/13 14:34	
Lead	ug/L	0.11J	1.0	07/02/13 14:34	
Manganese	ug/L	0.44J	1.0	07/02/13 14:34	
Nickel	ug/L	ND	1.0	07/02/13 14:34	
Selenium	ug/L	ND	1.0	07/02/13 14:34	

LABORATORY CONTROL SAMPLE: 1212533

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	39.2	98	85-115	
Cadmium	ug/L	40	40.0	100	85-115	
Chromium	ug/L	40	39.6	99	85-115	
Cobalt	ug/L	40	39.0	98	85-115	
Copper	ug/L	40	38.0	95	85-115	
Lead	ug/L	40	40.1	100	85-115	
Manganese	ug/L	40	39.6	99	85-115	
Nickel	ug/L	40	38.5	96	85-115	
Selenium	ug/L	40	40.3	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1212534 1212535

Parameter	Units	60147801001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	1.3	40	40	41.4	42.4	100	103	70-130	2	20	
Cadmium	ug/L	23.2	40	40	62.0	63.2	97	100	70-130	2	20	
Chromium	ug/L	0.95J	40	40	39.2	40.2	96	98	70-130	2	20	
Cobalt	ug/L	2.6	40	40	39.8	40.9	93	96	70-130	3	20	
Copper	ug/L	182	40	40	220	223	94	102	70-130	1	20	
Lead	ug/L	15.0	40	40	54.7	55.8	99	102	70-130	2	20	
Manganese	ug/L	1930	40	40	1970	1960	102	90	70-130	0	20	
Nickel	ug/L	4.1	40	40	40.9	42.4	92	96	70-130	4	20	
Selenium	ug/L	ND	40	40	40.8	40.9	102	102	70-130	0	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60147801

QC Batch: MPRP/23279

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60147801001, 60147801002

METHOD BLANK: 1212528

Matrix: Water

Associated Lab Samples: 60147801001, 60147801002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	07/02/13 13:21	
Cadmium, Dissolved	ug/L	ND	0.50	07/02/13 13:21	
Chromium, Dissolved	ug/L	ND	1.0	07/02/13 13:21	
Cobalt, Dissolved	ug/L	ND	1.0	07/02/13 13:21	
Copper, Dissolved	ug/L	ND	1.0	07/02/13 13:21	
Lead, Dissolved	ug/L	0.11J	1.0	07/02/13 13:21	
Manganese, Dissolved	ug/L	ND	1.0	07/02/13 13:21	
Nickel, Dissolved	ug/L	ND	1.0	07/02/13 13:21	
Selenium, Dissolved	ug/L	ND	1.0	07/02/13 13:21	

LABORATORY CONTROL SAMPLE: 1212529

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	40.7	102	85-115	
Cadmium, Dissolved	ug/L	40	41.5	104	85-115	
Chromium, Dissolved	ug/L	40	41.4	103	85-115	
Cobalt, Dissolved	ug/L	40	40.4	101	85-115	
Copper, Dissolved	ug/L	40	40.3	101	85-115	
Lead, Dissolved	ug/L	40	41.0	102	85-115	
Manganese, Dissolved	ug/L	40	41.5	104	85-115	
Nickel, Dissolved	ug/L	40	40.2	101	85-115	
Selenium, Dissolved	ug/L	40	41.5	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1212530

1212531

Parameter	Units	60147801002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	ND	40	40	42.5	41.4	106	103	70-130	3	20	
Cadmium, Dissolved	ug/L	19.4	40	40	60.5	59.8	103	101	70-130	1	20	
Chromium, Dissolved	ug/L	0.30J	40	40	39.5	39.2	98	97	70-130	1	20	
Cobalt, Dissolved	ug/L	2.5	40	40	41.2	40.7	97	95	70-130	1	20	
Copper, Dissolved	ug/L	7.5	40	40	45.0	44.7	94	93	70-130	1	20	
Lead, Dissolved	ug/L	0.14J	40	40	41.0	40.2	102	100	70-130	2	20	
Manganese, Dissolved	ug/L	1850	40	40	1940	1940	238	235	70-130	0	20 M1	
Nickel, Dissolved	ug/L	4.3	40	40	42.8	41.3	96	93	70-130	3	20	
Selenium, Dissolved	ug/L	ND	40	40	43.5	41.7	109	104	70-130	4	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60147801

QC Batch: WET/42134

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60147801001, 60147801002

METHOD BLANK: 1213895

Matrix: Water

Associated Lab Samples: 60147801001, 60147801002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	07/01/13 12:12	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	07/01/13 12:12	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	07/01/13 12:12	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	07/01/13 12:12	

LABORATORY CONTROL SAMPLE: 1213896

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	486	97	90-110	

SAMPLE DUPLICATE: 1213900

Parameter	Units	60147472013 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	10.0J	11.0J		10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	10.0J	11.0J		10	

SAMPLE DUPLICATE: 1213901

Parameter	Units	60147801001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	93.5	93.4	0	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	93.5	93.4	0	10	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60147801

QC Batch: WETA/25322

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60147801001, 60147801002

METHOD BLANK: 1214773

Matrix: Water

Associated Lab Samples: 60147801001, 60147801002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	07/02/13 15:26	
Chloride	mg/L	ND	1.0	07/02/13 15:26	
Fluoride	mg/L	ND	0.20	07/02/13 15:26	
Sulfate	mg/L	ND	1.0	07/02/13 15:26	

LABORATORY CONTROL SAMPLE: 1214774

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.1	102	90-110	
Chloride	mg/L	5	4.9	99	90-110	
Fluoride	mg/L	2.5	2.7	110	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1214775

1214776

Parameter	Units	60147333001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	ND	250	250	253	256	101	103	75-119	1	10	
Chloride	mg/L	400	250	250	664	659	105	104	64-118	1	12	
Fluoride	mg/L	ND	125	125	138	137	110	109	75-110	1	10	
Sulfate	mg/L	63.9	250	250	314	312	100	99	61-119	1	10	

MATRIX SPIKE SAMPLE: 1214777

Parameter	Units	60147843002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	25	26.9	97	75-119	
Chloride	mg/L	29.5	25	57.1	110	64-118	
Fluoride	mg/L	2.5	12.5	13.8	90	75-110	
Sulfate	mg/L	55.6	25	82.0	106	61-119	

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Rico-Argentine Mine Site
Pace Project No.: 60147801

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rico-Argentine Mine Site

Pace Project No.: 60147801

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60147801001	DR3A1306250400	EPA 200.7	MPRP/23275	EPA 200.7	ICP/18341
60147801002	DR3A1306260400	EPA 200.7	MPRP/23275	EPA 200.7	ICP/18341
60147801001	DR3A1306250400	EPA 200.7	MPRP/23278	EPA 200.7	ICP/18342
60147801002	DR3A1306260400	EPA 200.7	MPRP/23278	EPA 200.7	ICP/18342
60147801001	DR3A1306250400	EPA 200.8	MPRP/23280	EPA 200.8	ICPM/2358
60147801002	DR3A1306260400	EPA 200.8	MPRP/23280	EPA 200.8	ICPM/2358
60147801001	DR3A1306250400	EPA 200.8	MPRP/23279	EPA 200.8	ICPM/2359
60147801002	DR3A1306260400	EPA 200.8	MPRP/23279	EPA 200.8	ICPM/2359
60147801001	DR3A1306250400	EPA 245.1	MERP/7472	EPA 245.1	MERC/7429
60147801002	DR3A1306260400	EPA 245.1	MERP/7472	EPA 245.1	MERC/7429
60147801001	DR3A1306250400	EPA 245.1	MERP/7471	EPA 245.1	MERC/7427
60147801002	DR3A1306260400	EPA 245.1	MERP/7471	EPA 245.1	MERC/7427
60147801001	DR3A1306250400	SM 2320B	WET/42134		
60147801002	DR3A1306260400	SM 2320B	WET/42134		
60147801001	DR3A1306250400	EPA 300.0	WETA/25322		
60147801002	DR3A1306260400	EPA 300.0	WETA/25322		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO#: 60147801



60147801

Client Name: BP-AMEC Atlantic Richfield Co.

Optional

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Proj Due Date:

Tracking #: 1Z 733 W87 22 1006 0943 Pace Shipping Label Used? Yes ☐ No ☒

Proj Name:

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☒ Other ☐

Thermometer Used: T-112 / T-194

Type of Ice: Wet Blue ☐ None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 0-8

Date and initials of person examining contents: LC 6/27/13

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses	Matrix: <u>WT</u>	13.
All containers needing preservation have been checked:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	17. List State:

Client Notification/ Resolution:

Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: AMW

Date: 6/27/13

July 09, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: 2013 517 INJECTION TREATABILIT
Pace Project No.: 60148025

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on July 01, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148025

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148025

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60148025001	DR3A1306270400	Water	06/27/13 04:00	07/01/13 10:30
60148025002	DR3A1306280400	Water	06/28/13 04:00	07/01/13 10:30

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SAMPLE ANALYTE COUNT

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148025

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60148025001	DR3A1306270400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	TDS	1
		EPA 245.1	TDS	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60148025002	DR3A1306280400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	TDS	1
		EPA 245.1	TDS	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148025

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: July 09, 2013

General Information:

2 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

TP: The samples were received outside of required temperature range. Analysis was completed upon client approval.

- DR3A1306270400 (Lab ID: 60148025001)
- DR3A1306280400 (Lab ID: 60148025002)

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23329

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60148025001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1214487)
- Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148025

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: July 09, 2013

General Information:

2 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

TP: The samples were received outside of required temperature range. Analysis was completed upon client approval.

- DR3A1306270400 (Lab ID: 60148025001)
- DR3A1306280400 (Lab ID: 60148025002)

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148025

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: July 09, 2013

General Information:

2 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

TP: The samples were received outside of required temperature range. Analysis was completed upon client approval.

- DR3A1306270400 (Lab ID: 60148025001)
- DR3A1306280400 (Lab ID: 60148025002)

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23330

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60148025002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1214490)
 - Manganese
- MSD (Lab ID: 1214491)
 - Manganese

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT
Pace Project No.: 60148025

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: July 09, 2013

General Information:

2 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

TP: The samples were received outside of required temperature range. Analysis was completed upon client approval.

- DR3A1306270400 (Lab ID: 60148025001)
- DR3A1306280400 (Lab ID: 60148025002)

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23328

B: Analyte was detected in the associated method blank.

- BLANK for HBN 297289 [MPRP/233 (Lab ID: 1214480)]
- Lead, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148025

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: July 09, 2013

General Information:

2 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

TP: The samples were received outside of required temperature range. Analysis was completed upon client approval.

- DR3A1306270400 (Lab ID: 60148025001)
- DR3A1306280400 (Lab ID: 60148025002)

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148025

Method: EPA 245.1

Description: 245.1 Mercury, Dissolved

Client: BP AMEC

Date: July 09, 2013

General Information:

2 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

TP: The samples were received outside of required temperature range. Analysis was completed upon client approval.

- DR3A1306270400 (Lab ID: 60148025001)
- DR3A1306280400 (Lab ID: 60148025002)

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148025

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: July 09, 2013

General Information:

2 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

TP: The samples were received outside of required temperature range. Analysis was completed upon client approval.

- DR3A1306270400 (Lab ID: 60148025001)
- DR3A1306280400 (Lab ID: 60148025002)

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148025

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: July 09, 2013

General Information:

2 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

TP: The samples were received outside of required temperature range. Analysis was completed upon client approval.

- DR3A1306270400 (Lab ID: 60148025001)
- DR3A1306280400 (Lab ID: 60148025002)

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148025

Sample: DR3A1306270400 **Lab ID:** 60148025001 **Collected:** 06/27/13 04:00 **Received:** 07/01/13 10:30 **Matrix:** Water

Comments: • The samples were received outside of required temperature range. Analysis was completed upon client approval.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	830	ug/L	75.0	16.6	1	07/02/13 13:00	07/05/13 15:33	7429-90-5	M1
Calcium	238000	ug/L	100	10.4	1	07/02/13 13:00	07/05/13 15:33	7440-70-2	
Iron	8030	ug/L	50.0	11.6	1	07/02/13 13:00	07/05/13 15:33	7439-89-6	
Lithium	24.6	ug/L	10.0	2.4	1	07/02/13 13:00	07/05/13 15:33	7439-93-2	
Magnesium	19000	ug/L	50.0	6.5	1	07/02/13 13:00	07/05/13 15:33	7439-95-4	
Potassium	3880	ug/L	500	44.4	1	07/02/13 13:00	07/05/13 15:33	7440-09-7	
Silicon	8040	ug/L	500	23.9	1	07/02/13 13:00	07/05/13 15:33	7440-21-3	
Sodium	18600	ug/L	500	21.7	1	07/02/13 13:00	07/05/13 15:33	7440-23-5	
Zinc	4040	ug/L	50.0	3.3	1	07/02/13 13:00	07/05/13 15:33	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	59.1J	ug/L	75.0	16.6	1	07/02/13 13:00	07/05/13 15:52	7429-90-5	D9
Calcium, Dissolved	242000	ug/L	100	10.4	1	07/02/13 13:00	07/05/13 15:52	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	11.6	1	07/02/13 13:00	07/05/13 15:52	7439-89-6	D9
Lithium, Dissolved	25.5	ug/L	10.0	2.4	1	07/02/13 13:00	07/05/13 15:52	7439-93-2	
Magnesium, Dissolved	19400	ug/L	50.0	6.5	1	07/02/13 13:00	07/05/13 15:52	7439-95-4	D9
Potassium, Dissolved	3980	ug/L	500	44.4	1	07/02/13 13:00	07/05/13 15:52	7440-09-7	D9
Silicon, Dissolved	7360	ug/L	500	23.9	1	07/02/13 13:00	07/05/13 15:52	7440-21-3	D9
Sodium, Dissolved	19200	ug/L	500	21.7	1	07/02/13 13:00	07/05/13 15:52	7440-23-5	
Zinc, Dissolved	3670	ug/L	50.0	3.3	1	07/02/13 13:00	07/05/13 15:52	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.3	ug/L	1.0	0.050	1	07/02/13 13:00	07/03/13 12:33	7440-38-2	
Cadmium	21.4	ug/L	0.50	0.050	1	07/02/13 13:00	07/03/13 12:33	7440-43-9	
Chromium	0.82J	ug/L	1.0	0.070	1	07/02/13 13:00	07/03/13 12:33	7440-47-3	
Cobalt	2.5	ug/L	1.0	0.080	1	07/02/13 13:00	07/03/13 12:33	7440-48-4	
Copper	182	ug/L	1.0	0.12	1	07/02/13 13:00	07/03/13 12:33	7440-50-8	
Lead	14.1	ug/L	1.0	0.030	1	07/02/13 13:00	07/03/13 12:33	7439-92-1	
Manganese	1810	ug/L	1.0	0.14	1	07/02/13 13:00	07/03/13 12:33	7439-96-5	
Nickel	4.1	ug/L	1.0	0.070	1	07/02/13 13:00	07/03/13 12:33	7440-02-0	
Selenium	0.31J	ug/L	1.0	0.14	1	07/02/13 13:00	07/03/13 12:33	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.13J	ug/L	1.0	0.050	1	07/02/13 13:00	07/03/13 11:44	7440-38-2	
Cadmium, Dissolved	19.4	ug/L	0.50	0.050	1	07/02/13 13:00	07/03/13 11:44	7440-43-9	
Chromium, Dissolved	3.3	ug/L	1.0	0.070	1	07/02/13 13:00	07/03/13 11:44	7440-47-3	D9
Cobalt, Dissolved	3.6	ug/L	1.0	0.080	1	07/02/13 13:00	07/03/13 11:44	7440-48-4	D9
Copper, Dissolved	8.1	ug/L	1.0	0.12	1	07/02/13 13:00	07/03/13 11:44	7440-50-8	
Lead, Dissolved	0.40J	ug/L	1.0	0.030	1	07/02/13 13:00	07/03/13 11:44	7439-92-1	B
Manganese, Dissolved	1880	ug/L	1.0	0.14	1	07/02/13 13:00	07/03/13 11:44	7439-96-5	D9
Nickel, Dissolved	6.2	ug/L	1.0	0.070	1	07/02/13 13:00	07/03/13 11:44	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	07/02/13 13:00	07/03/13 11:44	7782-49-2	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148025

Sample: DR3A1306270400 **Lab ID: 60148025001** Collected: 06/27/13 04:00 Received: 07/01/13 10:30 Matrix: Water

Comments: • The samples were received outside of required temperature range. Analysis was completed upon client approval.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/02/13 11:30	07/03/13 11:50	7439-97-6	
245.1 Mercury, Dissolved Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/02/13 11:30	07/03/13 11:23	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	91.5	mg/L	20.0	1.2	1		07/02/13 08:26		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/02/13 08:26		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/02/13 08:26		
Alkalinity, Total as CaCO ₃	91.5	mg/L	20.0	1.2	1		07/02/13 08:26		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	ND	mg/L	1.0	0.090	1		07/08/13 22:22	24959-67-9	
Chloride	0.68J	mg/L	1.0	0.50	1		07/08/13 22:22	16887-00-6	
Fluoride	2.4	mg/L	0.20	0.047	1		07/08/13 22:22	16984-48-8	
Sulfate	729	mg/L	50.0	8.0	50		07/08/13 22:38	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148025

Sample: DR3A1306280400 **Lab ID: 60148025002** Collected: 06/28/13 04:00 Received: 07/01/13 10:30 Matrix: Water

Comments: • The samples were received outside of required temperature range. Analysis was completed upon client approval.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	771	ug/L	75.0	16.6	1	07/02/13 13:00	07/05/13 15:46	7429-90-5	
Calcium	244000	ug/L	100	10.4	1	07/02/13 13:00	07/05/13 15:46	7440-70-2	
Iron	7400	ug/L	50.0	11.6	1	07/02/13 13:00	07/05/13 15:46	7439-89-6	
Lithium	26.0	ug/L	10.0	2.4	1	07/02/13 13:00	07/05/13 15:46	7439-93-2	
Magnesium	19400	ug/L	50.0	6.5	1	07/02/13 13:00	07/05/13 15:46	7439-95-4	
Potassium	4030	ug/L	500	44.4	1	07/02/13 13:00	07/05/13 15:46	7440-09-7	
Silicon	8140	ug/L	500	23.9	1	07/02/13 13:00	07/05/13 15:46	7440-21-3	
Sodium	21500	ug/L	500	21.7	1	07/02/13 13:00	07/05/13 15:46	7440-23-5	
Zinc	4040	ug/L	50.0	3.3	1	07/02/13 13:00	07/05/13 15:46	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	61.9J	ug/L	75.0	16.6	1	07/02/13 13:00	07/05/13 16:14	7429-90-5	
Calcium, Dissolved	244000	ug/L	100	10.4	1	07/02/13 13:00	07/05/13 16:14	7440-70-2	
Iron, Dissolved	12.4J	ug/L	50.0	11.6	1	07/02/13 13:00	07/05/13 16:14	7439-89-6	
Lithium, Dissolved	25.1	ug/L	10.0	2.4	1	07/02/13 13:00	07/05/13 16:14	7439-93-2	
Magnesium, Dissolved	19200	ug/L	50.0	6.5	1	07/02/13 13:00	07/05/13 16:14	7439-95-4	
Potassium, Dissolved	4020	ug/L	500	44.4	1	07/02/13 13:00	07/05/13 16:14	7440-09-7	
Silicon, Dissolved	7360	ug/L	500	23.9	1	07/02/13 13:00	07/05/13 16:14	7440-21-3	
Sodium, Dissolved	21800	ug/L	500	21.7	1	07/02/13 13:00	07/05/13 16:14	7440-23-5	D9
Zinc, Dissolved	3610	ug/L	50.0	3.3	1	07/02/13 13:00	07/05/13 16:14	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.3	ug/L	1.0	0.050	1	07/02/13 13:00	07/03/13 12:38	7440-38-2	
Cadmium	21.2	ug/L	0.50	0.050	1	07/02/13 13:00	07/03/13 12:38	7440-43-9	
Chromium	1.1	ug/L	1.0	0.070	1	07/02/13 13:00	07/03/13 12:38	7440-47-3	
Cobalt	2.5	ug/L	1.0	0.080	1	07/02/13 13:00	07/03/13 12:38	7440-48-4	
Copper	168	ug/L	1.0	0.12	1	07/02/13 13:00	07/03/13 12:38	7440-50-8	
Lead	13.0	ug/L	1.0	0.030	1	07/02/13 13:00	07/03/13 12:38	7439-92-1	
Manganese	1800	ug/L	1.0	0.14	1	07/02/13 13:00	07/03/13 12:38	7439-96-5	M1
Nickel	4.1	ug/L	1.0	0.070	1	07/02/13 13:00	07/03/13 12:38	7440-02-0	
Selenium	0.25J	ug/L	1.0	0.14	1	07/02/13 13:00	07/03/13 12:38	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.099J	ug/L	1.0	0.050	1	07/02/13 13:00	07/03/13 11:48	7440-38-2	
Cadmium, Dissolved	19.7	ug/L	0.50	0.050	1	07/02/13 13:00	07/03/13 11:48	7440-43-9	
Chromium, Dissolved	5.6	ug/L	1.0	0.070	1	07/02/13 13:00	07/03/13 11:48	7440-47-3	D9
Cobalt, Dissolved	3.6	ug/L	1.0	0.080	1	07/02/13 13:00	07/03/13 11:48	7440-48-4	D9
Copper, Dissolved	7.8	ug/L	1.0	0.12	1	07/02/13 13:00	07/03/13 11:48	7440-50-8	
Lead, Dissolved	0.40J	ug/L	1.0	0.030	1	07/02/13 13:00	07/03/13 11:48	7439-92-1	B
Manganese, Dissolved	1850	ug/L	1.0	0.14	1	07/02/13 13:00	07/03/13 11:48	7439-96-5	D9
Nickel, Dissolved	6.6	ug/L	1.0	0.070	1	07/02/13 13:00	07/03/13 11:48	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	07/02/13 13:00	07/03/13 11:48	7782-49-2	

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148025

Sample: DR3A1306280400 **Lab ID: 60148025002** Collected: 06/28/13 04:00 Received: 07/01/13 10:30 Matrix: Water

Comments: • The samples were received outside of required temperature range. Analysis was completed upon client approval.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/02/13 11:30	07/03/13 11:57	7439-97-6	
245.1 Mercury, Dissolved Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/02/13 11:30	07/03/13 11:29	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	92.2	mg/L	20.0	1.2	1		07/02/13 08:30		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/02/13 08:30		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/02/13 08:30		
Alkalinity, Total as CaCO ₃	92.2	mg/L	20.0	1.2	1		07/02/13 08:30		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	ND	mg/L	1.0	0.090	1		07/08/13 23:24	24959-67-9	
Chloride	0.65J	mg/L	1.0	0.50	1		07/08/13 23:24	16887-00-6	
Fluoride	2.4	mg/L	0.20	0.047	1		07/08/13 23:24	16984-48-8	
Sulfate	738	mg/L	50.0	8.0	50		07/08/13 23:39	14808-79-8	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148025

QC Batch: MERP/7478

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury

Associated Lab Samples: 60148025001, 60148025002

METHOD BLANK: 1214534

Matrix: Water

Associated Lab Samples: 60148025001, 60148025002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	07/03/13 11:32	

LABORATORY CONTROL SAMPLE: 1214535

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.6	92	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1214536 1214537

Parameter	Units	60148025001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.6	4.7	92	93	70-130	1	20	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148025

QC Batch:	MERP/7479	Analysis Method:	EPA 245.1
QC Batch Method:	EPA 245.1	Analysis Description:	245.1 Mercury - Dissolved
Associated Lab Samples:	60148025001, 60148025002		

METHOD BLANK: 1214538 Matrix: Water

Associated Lab Samples: 60148025001, 60148025002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	07/03/13 11:16	

LABORATORY CONTROL SAMPLE: 1214539

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	4.8	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1214540 1214541

Parameter	Units	60148025001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury, Dissolved	ug/L	ND	5	5	4.2	4.3	84	86	70-130	2	20	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT
Pace Project No.: 60148025

QC Batch: MPRP/23329 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60148025001, 60148025002

METHOD BLANK: 1214484 Matrix: Water
Associated Lab Samples: 60148025001, 60148025002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	07/05/13 15:27	
Calcium	ug/L	ND	100	07/05/13 15:27	
Iron	ug/L	ND	50.0	07/05/13 15:27	
Lithium	ug/L	ND	10.0	07/05/13 15:27	
Magnesium	ug/L	ND	50.0	07/05/13 15:27	
Potassium	ug/L	ND	500	07/05/13 15:27	
Silicon	ug/L	ND	500	07/05/13 15:27	
Sodium	ug/L	ND	500	07/05/13 15:27	
Zinc	ug/L	ND	50.0	07/05/13 15:27	

LABORATORY CONTROL SAMPLE: 1214485

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	9600	96	85-115	
Calcium	ug/L	10000	9630	96	85-115	
Iron	ug/L	10000	9620	96	85-115	
Lithium	ug/L	1000	949	95	85-115	
Magnesium	ug/L	10000	9420	94	85-115	
Potassium	ug/L	10000	9480	95	85-115	
Silicon	ug/L	5000	4750	95	85-115	
Sodium	ug/L	10000	9530	95	85-115	
Zinc	ug/L	1000	956	96	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1214486 1214487

Parameter	Units	60148025001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	830	10000	10000	10500	10600	97	98	70-130	1	8	
Calcium	ug/L	238000	10000	10000	247000	257000	97	195	70-130	4	9 M1	
Iron	ug/L	8030	10000	10000	17500	17800	94	98	70-130	2	10	
Lithium	ug/L	24.6	1000	1000	1010	1020	98	100	70-130	1	20	
Magnesium	ug/L	19000	10000	10000	28700	29500	97	105	70-130	3	9	
Potassium	ug/L	3880	10000	10000	13700	13900	98	100	70-130	1	7	
Silicon	ug/L	8040	5000	5000	13000	13400	99	107	70-130	3	5	
Sodium	ug/L	18600	10000	10000	28600	29400	100	108	70-130	3	8	
Zinc	ug/L	4040	1000	1000	4980	5110	94	107	70-130	3	11	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT
Pace Project No.: 60148025

QC Batch: MPRP/23327 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Dissolved
Associated Lab Samples: 60148025001, 60148025002

METHOD BLANK: 1214476 Matrix: Water
Associated Lab Samples: 60148025001, 60148025002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	07/05/13 16:05	
Calcium, Dissolved	ug/L	ND	100	07/05/13 16:05	
Iron, Dissolved	ug/L	ND	50.0	07/05/13 16:05	
Lithium, Dissolved	ug/L	ND	10.0	07/05/13 16:05	
Magnesium, Dissolved	ug/L	ND	50.0	07/05/13 16:05	
Potassium, Dissolved	ug/L	ND	500	07/05/13 16:05	
Silicon, Dissolved	ug/L	ND	500	07/05/13 16:05	
Sodium, Dissolved	ug/L	ND	500	07/05/13 16:05	
Zinc, Dissolved	ug/L	ND	50.0	07/05/13 16:05	

LABORATORY CONTROL SAMPLE: 1214477

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	9560	96	85-115	
Calcium, Dissolved	ug/L	10000	9660	97	85-115	
Iron, Dissolved	ug/L	10000	9560	96	85-115	
Lithium, Dissolved	ug/L	1000	948	95	85-115	
Magnesium, Dissolved	ug/L	10000	9400	94	85-115	
Potassium, Dissolved	ug/L	10000	9480	95	85-115	
Silicon, Dissolved	ug/L	5000	4800	96	85-115	
Sodium, Dissolved	ug/L	10000	9610	96	85-115	
Zinc, Dissolved	ug/L	1000	955	96	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1214478 1214479

Parameter	Units	60148025001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	59.1J	10000	10000	9850	9860	98	98	70-130	0	8	
Calcium, Dissolved	ug/L	242000	10000	10000	254000	253000	123	109	70-130	1	9	
Iron, Dissolved	ug/L	ND	10000	10000	9640	9690	96	97	70-130	1	10	
Lithium, Dissolved	ug/L	25.5	1000	1000	1010	1020	99	99	70-130	0	20	
Magnesium, Dissolved	ug/L	19400	10000	10000	28800	29200	94	98	70-130	2	9	
Potassium, Dissolved	ug/L	3980	10000	10000	13900	14000	99	100	70-130	0	7	
Silicon, Dissolved	ug/L	7360	5000	5000	12300	12400	100	100	70-130	0	5	
Sodium, Dissolved	ug/L	19200	10000	10000	29300	29200	101	100	70-130	0	8	
Zinc, Dissolved	ug/L	3670	1000	1000	4560	4580	89	91	70-130	0	11	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148025

QC Batch: MPRP/23330 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60148025001, 60148025002

METHOD BLANK: 1214488 Matrix: Water

Associated Lab Samples: 60148025001, 60148025002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	07/03/13 12:25	
Cadmium	ug/L	0.069J	0.50	07/03/13 12:25	
Chromium	ug/L	ND	1.0	07/03/13 12:25	
Cobalt	ug/L	ND	1.0	07/03/13 12:25	
Copper	ug/L	ND	1.0	07/03/13 12:25	
Lead	ug/L	0.56J	1.0	07/03/13 12:25	
Manganese	ug/L	0.31J	1.0	07/03/13 12:25	
Nickel	ug/L	ND	1.0	07/03/13 12:25	
Selenium	ug/L	ND	1.0	07/03/13 12:25	

LABORATORY CONTROL SAMPLE: 1214489

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	39.3	98	85-115	
Cadmium	ug/L	40	39.5	99	85-115	
Chromium	ug/L	40	39.9	100	85-115	
Cobalt	ug/L	40	39.4	99	85-115	
Copper	ug/L	40	40.0	100	85-115	
Lead	ug/L	40	39.2	98	85-115	
Manganese	ug/L	40	39.4	98	85-115	
Nickel	ug/L	40	39.2	98	85-115	
Selenium	ug/L	40	39.1	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1214490 1214491

Parameter	Units	60148025002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	1.3	40	40	40.1	40.4	97	98	70-130	1	20	
Cadmium	ug/L	21.2	40	40	59.2	59.6	95	96	70-130	1	20	
Chromium	ug/L	1.1	40	40	38.6	39.3	94	95	70-130	2	20	
Cobalt	ug/L	2.5	40	40	39.7	40.0	93	94	70-130	1	20	
Copper	ug/L	168	40	40	203	210	87	104	70-130	3	20	
Lead	ug/L	13.0	40	40	51.1	51.2	95	96	70-130	0	20	
Manganese	ug/L	1800	40	40	1810	1890	35	230	70-130	4	20 M1	
Nickel	ug/L	4.1	40	40	40.7	41.2	92	93	70-130	1	20	
Selenium	ug/L	0.25J	40	40	38.6	38.5	96	96	70-130	0	20	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT
Pace Project No.: 60148025

QC Batch: MPRP/23328 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60148025001, 60148025002

METHOD BLANK: 1214480 Matrix: Water
Associated Lab Samples: 60148025001, 60148025002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	07/03/13 11:36	
Cadmium, Dissolved	ug/L	0.074J	0.50	07/03/13 11:36	
Chromium, Dissolved	ug/L	ND	1.0	07/03/13 11:36	
Cobalt, Dissolved	ug/L	ND	1.0	07/03/13 11:36	
Copper, Dissolved	ug/L	ND	1.0	07/03/13 11:36	
Lead, Dissolved	ug/L	0.39J	1.0	07/03/13 11:36	
Manganese, Dissolved	ug/L	0.22J	1.0	07/03/13 11:36	
Nickel, Dissolved	ug/L	ND	1.0	07/03/13 11:36	
Selenium, Dissolved	ug/L	ND	1.0	07/03/13 11:36	

LABORATORY CONTROL SAMPLE: 1214481

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	40.0	100	85-115	
Cadmium, Dissolved	ug/L	40	40.4	101	85-115	
Chromium, Dissolved	ug/L	40	40.7	102	85-115	
Cobalt, Dissolved	ug/L	40	40.5	101	85-115	
Copper, Dissolved	ug/L	40	41.0	103	85-115	
Lead, Dissolved	ug/L	40	40.0	100	85-115	
Manganese, Dissolved	ug/L	40	39.9	100	85-115	
Nickel, Dissolved	ug/L	40	40.4	101	85-115	
Selenium, Dissolved	ug/L	40	39.2	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1214482 1214483

Parameter	Units	60148025002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	0.099J	40	40	41.1	41.2	103	103	70-130	0	20	
Cadmium, Dissolved	ug/L	19.7	40	40	59.3	58.4	99	97	70-130	2	20	
Chromium, Dissolved	ug/L	5.6	40	40	45.3	45.0	99	98	70-130	1	20	
Cobalt, Dissolved	ug/L	3.6	40	40	42.4	42.3	97	97	70-130	0	20	
Copper, Dissolved	ug/L	7.8	40	40	45.8	46.0	95	95	70-130	0	20	
Lead, Dissolved	ug/L	0.40J	40	40	39.5	39.5	98	98	70-130	0	20	
Manganese, Dissolved	ug/L	1850	40	40	1890	1880	102	80	70-130	0	20	
Nickel, Dissolved	ug/L	6.6	40	40	44.4	44.8	94	96	70-130	1	20	
Selenium, Dissolved	ug/L	ND	40	40	41.0	41.5	102	103	70-130	1	20	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148025

QC Batch: WET/42153

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60148025001, 60148025002

METHOD BLANK: 1214335

Matrix: Water

Associated Lab Samples: 60148025001, 60148025002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	07/02/13 07:57	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	07/02/13 07:57	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	07/02/13 07:57	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	07/02/13 07:57	

LABORATORY CONTROL SAMPLE: 1214336

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	481	96	90-110	

SAMPLE DUPLICATE: 1214339

Parameter	Units	60147661001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	144	139	3	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	144	139	3	10	

SAMPLE DUPLICATE: 1214340

Parameter	Units	60147758001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	2.8J	4.8J		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	40.7	41.7	3	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	37.9	37.0	2	10	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT
Pace Project No.: 60148025

QC Batch: WETA/25374 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60148025001, 60148025002

METHOD BLANK: 1216497 Matrix: Water
Associated Lab Samples: 60148025001, 60148025002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	07/08/13 23:55	
Chloride	mg/L	ND	1.0	07/08/13 23:55	
Fluoride	mg/L	ND	0.20	07/08/13 23:55	
Sulfate	mg/L	ND	1.0	07/08/13 23:55	

LABORATORY CONTROL SAMPLE: 1216498

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.1	102	90-110	
Chloride	mg/L	5	5.0	99	90-110	
Fluoride	mg/L	2.5	2.6	105	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1216499 1216500

Parameter	Units	60147625001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	ND	50	50	48.2	48.9	96	98	75-119	1	10	
Chloride	mg/L	122	50	50	168	166	91	89	64-118	1	12	
Fluoride	mg/L	ND	25	25	25.8	25.4	103	102	75-110	1	10	
Sulfate	mg/L	87.1	50	50	135	135	95	95	61-119	0	10	

MATRIX SPIKE SAMPLE: 1216501

Parameter	Units	60147640001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	50	48.1	96	75-119	
Chloride	mg/L	126	50	168	86	64-118	
Fluoride	mg/L	ND	25	25.6	102	75-110	
Sulfate	mg/L	90.3	50	136	91	61-119	

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 2013 517 INJECTION TREATABILIT
Pace Project No.: 60148025

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148025

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60148025001	DR3A1306270400	EPA 200.7	MPRP/23329	EPA 200.7	ICP/18375
60148025002	DR3A1306280400	EPA 200.7	MPRP/23329	EPA 200.7	ICP/18375
60148025001	DR3A1306270400	EPA 200.7	MPRP/23327	EPA 200.7	ICP/18374
60148025002	DR3A1306280400	EPA 200.7	MPRP/23327	EPA 200.7	ICP/18374
60148025001	DR3A1306270400	EPA 200.8	MPRP/23330	EPA 200.8	ICPM/2367
60148025002	DR3A1306280400	EPA 200.8	MPRP/23330	EPA 200.8	ICPM/2367
60148025001	DR3A1306270400	EPA 200.8	MPRP/23328	EPA 200.8	ICPM/2366
60148025002	DR3A1306280400	EPA 200.8	MPRP/23328	EPA 200.8	ICPM/2366
60148025001	DR3A1306270400	EPA 245.1	MERP/7478	EPA 245.1	MERC/7432
60148025002	DR3A1306280400	EPA 245.1	MERP/7478	EPA 245.1	MERC/7432
60148025001	DR3A1306270400	EPA 245.1	MERP/7479	EPA 245.1	MERC/7433
60148025002	DR3A1306280400	EPA 245.1	MERP/7479	EPA 245.1	MERC/7433
60148025001	DR3A1306270400	SM 2320B	WET/42153		
60148025002	DR3A1306280400	SM 2320B	WET/42153		
60148025001	DR3A1306270400	EPA 300.0	WETA/25374		
60148025002	DR3A1306280400	EPA 300.0	WETA/25374		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt
ESI Tech Spec Client

WO#: 60148025



60148025

Client Name: BR Rio AMEC dnmw 7/1/13

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 1E 753 W87 1006 0934 Pace Shipping Label Used? Yes ☐ No ☒

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☒ Other ☐

Thermometer Used: T-112 / T-194

Type of Ice: Wet Blue ☐ None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 6.8

Date and initials of person examining contents: KE 7/1/13

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2. <u>Temp > 6°</u>
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4. <u>Ice was melted in cooler</u>
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses	Matrix: <u>WT</u>	13.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	17. List State:

Client Notification/ Resolution:

Copy COC to Client? Y / N

Field Data Required? Y / N

Person Contacted: Lynda Lombardi Date/Time: 7/1/13

Comments/ Resolution: Email - Analyze out of temp? dnmw 7/1/13

Per Lynda Lombardi - continue w/ analysis dnmw 7/1/13

Project Manager Review: cdnmw

Date: 7/1/13

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: 11:47 Start:

End: 1:53 End:

Temp: 6.0 Temp:

Laboratory Management Program LaMP Chain of Custody Record

Page 1 of 1

BP/ARC Project Name: Rico-Argentine Mine Site

Req Due Date (mm/dd/yy): _____

Rush TAT: Yes ☒ No ☐

BP/ARC Facility No: _____

Lab Work Order Number: 60148025

Lab Name: Pace Analytical Laboratories, Inc.				BP/ARC Facility Address: Rico-Argentine Mine				Consultant/Contractor: AMEC E&I, Inc.													
Lab Address: 9608 Loiret Blvd., Lenexa, KS 66219				City, State, ZIP Code: Rico, Colorado				Consultant/Contractor Project No: SA11161313.300H													
Lab PM: Heather Wilson				Lead Regulatory Agency: U.S. EPA Region 8				Address: 10670 White Rock Road, Suite 100, Rancho Cordova, CA													
Lab Phone: (913) 563-1407				California Global ID No.: NA				Consultant/Contractor PM: Marc Lombardi													
Lab Shipping Acct: UPS # 733W87				Enfos Proposal No: D00LL-0010 WR 266494				Phone: 916-636-3200													
Lab Bottle Order No: NA				Accounting Mode: Provision <input checked="" type="checkbox"/> OOC-BU <input type="checkbox"/> OOC-RM <input type="checkbox"/>				Email Report/EDD To: lynda.lombardi@amec.com													
Other Info: 2013 517 Injection Treatability Study				Stage: 4-Execute Activity: Spend				Invoice To: BP/ARC <input checked="" type="checkbox"/> Contractor <input type="checkbox"/>													
BP/ARC EBM: Anthony Brown				Matrix		No. Containers / Preservative		Requested Analyses				Report Type & QC Level									
EBM Phone: 714-228-6770												Standard <input checked="" type="checkbox"/>									
EBM Email: anthony.brown@bp.com												Full Data Package <input type="checkbox"/>									
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Methanol	Tot Metals-see notes (E200.7/200.8/E245.1)	Dis Metals-see notes (E200.7/200.8/E245.1)	Alkalinity-Total, HCO ₃ , CO ₃ , OH (SM2320B)	Bromide (E300.0)	Chloride (E300.0)	Fluoride (E300.0)	Sulfate (E300.0)	Comments	
	DR3A1306270400	6/27/13	0400	X	1/10	1/10	3	1	2	1	1	1	X	X	X	X	X	X	X	1/10	Dissolved metals samples are field filtered
	DR3A1306280400	6/28/13	0400	X	1/10	1/10	3	1	2	1	1	1	X	X	X	X	X	X	X	1/10	
<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p>6/28/13</p> </div>																					
Metals are: Al, Ca, Fe, K, Li, Na, Mg, Si,																					
Zn (E200.7); As, Cd, Co, Cr, Cu, Mn, Ni,																					
Pb, Se (E200.8); and Hg (E245.1)																					
RUSH 5-day TAT																					
Sampler's Name: <u>Kyle Wynn</u>				Relinquished By / Affiliation: <u>Kyle Wynn / AMEC</u>				Date: <u>6/28/13</u>		Time: <u>1430</u>		Accepted By / Affiliation: <u>Kyle Wynn / PASI</u>				Date: <u>7/1/13</u>		Time: <u>10:30</u>			
Sampler's Company: <u>AMEC</u>																					
Shipment Method: <u>UPS</u>				Ship Date: _____																	
Shipment Tracking No: <u>17733 W872210060934</u>																					
Special Instructions:																					
THIS LINE - LAB USE ONLY: Custody Seals in Place <input checked="" type="checkbox"/> / No <input type="checkbox"/> Temp Blank: <input checked="" type="checkbox"/> / No <input type="checkbox"/> Cooler Temp on Receipt: <u>6.8</u> °F/C Trip Blank: Yes <input checked="" type="checkbox"/> / No <input type="checkbox"/> MS/MSD Sample Submitted: Yes / No																					

July 10, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO-ARGENTINE MINE SITE
Pace Project No.: 60148080

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on July 02, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60148080

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60148080

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60148080001	DR3A1306290400	Water	06/29/13 04:00	07/02/13 10:15
60148080002	DR3A1306300400	Water	06/30/13 04:00	07/02/13 10:15
60148080003	DR3A1307010400	Water	07/01/13 04:00	07/02/13 10:15

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60148080

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60148080001	DR3A1306290400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60148080002	DR3A1306300400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60148080003	DR3A1307010400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60148080

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: July 10, 2013

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23346

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60148080001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1215105)
 - Calcium
- MSD (Lab ID: 1215106)
 - Calcium

R1: RPD value was outside control limits.

- MSD (Lab ID: 1215106)
 - Silicon

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60148080

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: July 10, 2013

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23344

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60148080001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1215098)
- Calcium, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60148080

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: July 10, 2013

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23347

B: Analyte was detected in the associated method blank.

- BLANK for HBN 297443 [MPRP/233 (Lab ID: 1215107)]
 - Chromium
 - Selenium

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23347

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60148080002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1215109)
 - Manganese
- MSD (Lab ID: 1215110)
 - Manganese

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE
Pace Project No.: 60148080

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: July 10, 2013

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23345

B: Analyte was detected in the associated method blank.

- BLANK for HBN 297441 [MPRP/233 (Lab ID: 1215099)]
 - Chromium, Dissolved
 - Copper, Dissolved
 - Lead, Dissolved
 - Selenium, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23345

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60148080002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1215101)
 - Manganese, Dissolved
- MSD (Lab ID: 1215102)
 - Manganese, Dissolved

Additional Comments:

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60148080

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: July 10, 2013

General Information:

3 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MERP/7484

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60147147001,60148080001

R1: RPD value was outside control limits.

- MSD (Lab ID: 1216526)
- Mercury

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60148080

Method: EPA 245.1

Description: 245.1 Mercury, Dissolved

Client: BP AMEC

Date: July 10, 2013

General Information:

3 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60148080

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: July 10, 2013

General Information:

3 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60148080

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: July 10, 2013

General Information:

3 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60148080

Sample: DR3A1306290400			Lab ID: 60148080001		Collected: 06/29/13 04:00		Received: 07/02/13 10:15		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual	
200.7 Metals, Total			Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum	631	ug/L	75.0	16.6	1	07/03/13 10:00	07/08/13 12:21	7429-90-5	M1	
Calcium	249000	ug/L	100	10.4	1	07/03/13 10:00	07/08/13 12:21	7440-70-2		
Iron	6240	ug/L	50.0	11.6	1	07/03/13 10:00	07/08/13 12:21	7439-89-6		
Lithium	27.5	ug/L	10.0	2.4	1	07/03/13 10:00	07/08/13 12:21	7439-93-2		
Magnesium	20700	ug/L	50.0	6.5	1	07/03/13 10:00	07/08/13 12:21	7439-95-4		
Potassium	5770	ug/L	500	44.4	1	07/03/13 10:00	07/08/13 12:21	7440-09-7	R1	
Silicon	8300	ug/L	500	23.9	1	07/03/13 10:00	07/08/13 12:21	7440-21-3		
Sodium	27600	ug/L	500	21.7	1	07/03/13 10:00	07/08/13 12:21	7440-23-5		
Zinc	4220	ug/L	50.0	3.3	1	07/03/13 10:00	07/08/13 12:21	7440-66-6		
200.7 Metals, Dissolved			Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	62.4J	ug/L	75.0	16.6	1	07/03/13 10:00	07/08/13 12:50	7429-90-5	D9,M1	
Calcium, Dissolved	250000	ug/L	100	10.4	1	07/03/13 10:00	07/08/13 12:50	7440-70-2		
Iron, Dissolved	ND	ug/L	50.0	11.6	1	07/03/13 10:00	07/08/13 12:50	7439-89-6		
Lithium, Dissolved	27.0	ug/L	10.0	2.4	1	07/03/13 10:00	07/08/13 12:50	7439-93-2		
Magnesium, Dissolved	20000	ug/L	50.0	6.5	1	07/03/13 10:00	07/08/13 12:50	7439-95-4		
Potassium, Dissolved	5740	ug/L	500	44.4	1	07/03/13 10:00	07/08/13 12:50	7440-09-7		
Silicon, Dissolved	7360	ug/L	500	23.9	1	07/03/13 10:00	07/08/13 12:50	7440-21-3		
Sodium, Dissolved	27400	ug/L	500	21.7	1	07/03/13 10:00	07/08/13 12:50	7440-23-5		
Zinc, Dissolved	3420	ug/L	50.0	3.3	1	07/03/13 10:00	07/08/13 12:50	7440-66-6		
200.8 MET ICPMS			Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Arsenic	0.65J	ug/L	1.0	0.050	1	07/03/13 00:00	07/08/13 16:39	7440-38-2	B	
Cadmium	20.9	ug/L	0.50	0.050	1	07/03/13 00:00	07/08/13 16:39	7440-43-9		
Chromium	0.41J	ug/L	1.0	0.070	1	07/03/13 00:00	07/08/13 16:39	7440-47-3		
Cobalt	2.3	ug/L	1.0	0.080	1	07/03/13 00:00	07/08/13 16:39	7440-48-4		
Copper	120	ug/L	1.0	0.12	1	07/03/13 00:00	07/08/13 16:39	7440-50-8		
Lead	9.0	ug/L	1.0	0.030	1	07/03/13 00:00	07/08/13 16:39	7439-92-1		
Manganese	1830	ug/L	1.0	0.14	1	07/03/13 00:00	07/08/13 16:39	7439-96-5		
Nickel	3.8	ug/L	1.0	0.070	1	07/03/13 00:00	07/08/13 16:39	7440-02-0	B	
Selenium	0.46J	ug/L	1.0	0.14	1	07/03/13 00:00	07/08/13 16:39	7782-49-2		
200.8 MET ICPMS, Dissolved			Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Arsenic, Dissolved	ND	ug/L	1.0	0.050	1	07/03/13 10:00	07/08/13 14:43	7440-38-2	D9	
Cadmium, Dissolved	17.5	ug/L	0.50	0.050	1	07/03/13 10:00	07/08/13 14:43	7440-43-9		
Chromium, Dissolved	ND	ug/L	1.0	0.070	1	07/03/13 10:00	07/08/13 14:43	7440-47-3		
Cobalt, Dissolved	3.5	ug/L	1.0	0.080	1	07/03/13 10:00	07/08/13 14:43	7440-48-4		
Copper, Dissolved	4.4	ug/L	1.0	0.12	1	07/03/13 10:00	07/08/13 14:43	7440-50-8		
Lead, Dissolved	0.096J	ug/L	1.0	0.030	1	07/03/13 10:00	07/08/13 14:43	7439-92-1		
Manganese, Dissolved	1800	ug/L	1.0	0.14	1	07/03/13 10:00	07/08/13 14:43	7439-96-5		
Nickel, Dissolved	3.8	ug/L	1.0	0.070	1	07/03/13 10:00	07/08/13 14:43	7440-02-0		
Selenium, Dissolved	0.34J	ug/L	1.0	0.14	1	07/03/13 10:00	07/08/13 14:43	7782-49-2		
245.1 Mercury			Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	ND	ug/L	0.20	0.14	1	07/08/13 10:30	07/08/13 14:41	7439-97-6		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60148080

Sample: DR3A1306290400		Lab ID: 60148080001		Collected: 06/29/13 04:00		Received: 07/02/13 10:15		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/08/13 10:30	07/08/13 15:36	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	94.0	mg/L	20.0	1.2	1		07/05/13 11:38		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/05/13 11:38		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/05/13 11:38		
Alkalinity, Total as CaCO ₃	94.0	mg/L	20.0	1.2	1		07/05/13 11:38		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.090	1		07/09/13 17:50	24959-67-9	
Chloride	0.85J	mg/L	1.0	0.50	1		07/09/13 17:50	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.047	1		07/09/13 17:50	16984-48-8	
Sulfate	629	mg/L	100	16.0	100		07/10/13 11:33	14808-79-8	

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ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60148080

Sample: DR3A1306300400 Lab ID: 60148080002 Collected: 06/30/13 04:00 Received: 07/02/13 10:15 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	445	ug/L	75.0	16.6	1	07/03/13 10:00	07/08/13 12:34	7429-90-5	
Calcium	237000	ug/L	100	10.4	1	07/03/13 10:00	07/08/13 12:34	7440-70-2	
Iron	5390	ug/L	50.0	11.6	1	07/03/13 10:00	07/08/13 12:34	7439-89-6	
Lithium	26.5	ug/L	10.0	2.4	1	07/03/13 10:00	07/08/13 12:34	7439-93-2	
Magnesium	18700	ug/L	50.0	6.5	1	07/03/13 10:00	07/08/13 12:34	7439-95-4	
Potassium	5540	ug/L	500	44.4	1	07/03/13 10:00	07/08/13 12:34	7440-09-7	
Silicon	7640	ug/L	500	23.9	1	07/03/13 10:00	07/08/13 12:34	7440-21-3	
Sodium	29400	ug/L	500	21.7	1	07/03/13 10:00	07/08/13 12:34	7440-23-5	
Zinc	3620	ug/L	50.0	3.3	1	07/03/13 10:00	07/08/13 12:34	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	66.5J	ug/L	75.0	16.6	1	07/03/13 10:00	07/08/13 13:06	7429-90-5	
Calcium, Dissolved	250000	ug/L	100	10.4	1	07/03/13 10:00	07/08/13 13:06	7440-70-2	D9
Iron, Dissolved	ND	ug/L	50.0	11.6	1	07/03/13 10:00	07/08/13 13:06	7439-89-6	
Lithium, Dissolved	27.2	ug/L	10.0	2.4	1	07/03/13 10:00	07/08/13 13:06	7439-93-2	D9
Magnesium, Dissolved	20100	ug/L	50.0	6.5	1	07/03/13 10:00	07/08/13 13:06	7439-95-4	D9
Potassium, Dissolved	5610	ug/L	500	44.4	1	07/03/13 10:00	07/08/13 13:06	7440-09-7	D9
Silicon, Dissolved	7410	ug/L	500	23.9	1	07/03/13 10:00	07/08/13 13:06	7440-21-3	
Sodium, Dissolved	30100	ug/L	500	21.7	1	07/03/13 10:00	07/08/13 13:06	7440-23-5	D9
Zinc, Dissolved	3530	ug/L	50.0	3.3	1	07/03/13 10:00	07/08/13 13:06	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.56J	ug/L	1.0	0.050	1	07/03/13 00:00	07/08/13 16:43	7440-38-2	
Cadmium	20.1	ug/L	0.50	0.050	1	07/03/13 00:00	07/08/13 16:43	7440-43-9	
Chromium	0.20J	ug/L	1.0	0.070	1	07/03/13 00:00	07/08/13 16:43	7440-47-3	B
Cobalt	2.4	ug/L	1.0	0.080	1	07/03/13 00:00	07/08/13 16:43	7440-48-4	
Copper	91.7	ug/L	1.0	0.12	1	07/03/13 00:00	07/08/13 16:43	7440-50-8	
Lead	5.9	ug/L	1.0	0.030	1	07/03/13 00:00	07/08/13 16:43	7439-92-1	
Manganese	1810	ug/L	1.0	0.14	1	07/03/13 00:00	07/08/13 16:43	7439-96-5	M1
Nickel	3.5	ug/L	1.0	0.070	1	07/03/13 00:00	07/08/13 16:43	7440-02-0	
Selenium	0.38J	ug/L	1.0	0.14	1	07/03/13 00:00	07/08/13 16:43	7782-49-2	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	1.0	0.050	1	07/03/13 10:00	07/08/13 14:47	7440-38-2	
Cadmium, Dissolved	17.5	ug/L	0.50	0.050	1	07/03/13 10:00	07/08/13 14:47	7440-43-9	
Chromium, Dissolved	ND	ug/L	1.0	0.070	1	07/03/13 10:00	07/08/13 14:47	7440-47-3	
Cobalt, Dissolved	3.9	ug/L	1.0	0.080	1	07/03/13 10:00	07/08/13 14:47	7440-48-4	D9
Copper, Dissolved	4.5	ug/L	1.0	0.12	1	07/03/13 10:00	07/08/13 14:47	7440-50-8	B
Lead, Dissolved	0.095J	ug/L	1.0	0.030	1	07/03/13 10:00	07/08/13 14:47	7439-92-1	B
Manganese, Dissolved	1790	ug/L	1.0	0.14	1	07/03/13 10:00	07/08/13 14:47	7439-96-5	M1
Nickel, Dissolved	3.8	ug/L	1.0	0.070	1	07/03/13 10:00	07/08/13 14:47	7440-02-0	D9
Selenium, Dissolved	0.34J	ug/L	1.0	0.14	1	07/03/13 10:00	07/08/13 14:47	7782-49-2	B
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/08/13 10:30	07/08/13 14:46	7439-97-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60148080

Sample: DR3A1306300400		Lab ID: 60148080002		Collected: 06/30/13 04:00		Received: 07/02/13 10:15		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/08/13 10:30	07/08/13 15:42	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	101	mg/L	20.0	1.2	1		07/05/13 11:53		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/05/13 11:53		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/05/13 11:53		
Alkalinity, Total as CaCO ₃	101	mg/L	20.0	1.2	1		07/05/13 11:53		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.090	1		07/09/13 18:07	24959-67-9	
Chloride	0.89J	mg/L	1.0	0.50	1		07/09/13 18:07	16887-00-6	
Fluoride	2.3	mg/L	0.20	0.047	1		07/09/13 18:07	16984-48-8	
Sulfate	626	mg/L	100	16.0	100		07/10/13 11:49	14808-79-8	

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ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60148080

Sample: DR3A1307010400 Lab ID: 60148080003 Collected: 07/01/13 04:00 Received: 07/02/13 10:15 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	440	ug/L	75.0	16.6	1	07/03/13 10:00	07/08/13 12:37	7429-90-5	
Calcium	229000	ug/L	100	10.4	1	07/03/13 10:00	07/08/13 12:37	7440-70-2	
Iron	4800	ug/L	50.0	11.6	1	07/03/13 10:00	07/08/13 12:37	7439-89-6	
Lithium	25.7	ug/L	10.0	2.4	1	07/03/13 10:00	07/08/13 12:37	7439-93-2	
Magnesium	18400	ug/L	50.0	6.5	1	07/03/13 10:00	07/08/13 12:37	7439-95-4	
Potassium	5240	ug/L	500	44.4	1	07/03/13 10:00	07/08/13 12:37	7440-09-7	
Silicon	7400	ug/L	500	23.9	1	07/03/13 10:00	07/08/13 12:37	7440-21-3	
Sodium	32600	ug/L	500	21.7	1	07/03/13 10:00	07/08/13 12:37	7440-23-5	
Zinc	3730	ug/L	50.0	3.3	1	07/03/13 10:00	07/08/13 12:37	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	63.0J	ug/L	75.0	16.6	1	07/03/13 10:00	07/08/13 13:09	7429-90-5	
Calcium, Dissolved	240000	ug/L	100	10.4	1	07/03/13 10:00	07/08/13 13:09	7440-70-2	D9
Iron, Dissolved	ND	ug/L	50.0	11.6	1	07/03/13 10:00	07/08/13 13:09	7439-89-6	
Lithium, Dissolved	27.4	ug/L	10.0	2.4	1	07/03/13 10:00	07/08/13 13:09	7439-93-2	D9
Magnesium, Dissolved	19100	ug/L	50.0	6.5	1	07/03/13 10:00	07/08/13 13:09	7439-95-4	D9
Potassium, Dissolved	5390	ug/L	500	44.4	1	07/03/13 10:00	07/08/13 13:09	7440-09-7	D9
Silicon, Dissolved	7190	ug/L	500	23.9	1	07/03/13 10:00	07/08/13 13:09	7440-21-3	
Sodium, Dissolved	33300	ug/L	500	21.7	1	07/03/13 10:00	07/08/13 13:09	7440-23-5	D9
Zinc, Dissolved	3200	ug/L	50.0	3.3	1	07/03/13 10:00	07/08/13 13:09	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.42J	ug/L	1.0	0.050	1	07/03/13 00:00	07/08/13 17:00	7440-38-2	
Cadmium	19.0	ug/L	0.50	0.050	1	07/03/13 00:00	07/08/13 17:00	7440-43-9	
Chromium	0.14J	ug/L	1.0	0.070	1	07/03/13 00:00	07/08/13 17:00	7440-47-3	B
Cobalt	2.3	ug/L	1.0	0.080	1	07/03/13 00:00	07/08/13 17:00	7440-48-4	
Copper	89.5	ug/L	1.0	0.12	1	07/03/13 00:00	07/08/13 17:00	7440-50-8	
Lead	6.2	ug/L	1.0	0.030	1	07/03/13 00:00	07/08/13 17:00	7439-92-1	
Manganese	1710	ug/L	1.0	0.14	1	07/03/13 00:00	07/08/13 17:00	7439-96-5	
Nickel	3.5	ug/L	1.0	0.070	1	07/03/13 00:00	07/08/13 17:00	7440-02-0	
Selenium	0.40J	ug/L	1.0	0.14	1	07/03/13 00:00	07/08/13 17:00	7782-49-2	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	1.0	0.050	1	07/03/13 10:00	07/08/13 15:03	7440-38-2	
Cadmium, Dissolved	17.4	ug/L	0.50	0.050	1	07/03/13 10:00	07/08/13 15:03	7440-43-9	
Chromium, Dissolved	0.17J	ug/L	1.0	0.070	1	07/03/13 10:00	07/08/13 15:03	7440-47-3	B
Cobalt, Dissolved	3.4	ug/L	1.0	0.080	1	07/03/13 10:00	07/08/13 15:03	7440-48-4	D9
Copper, Dissolved	6.2	ug/L	1.0	0.12	1	07/03/13 10:00	07/08/13 15:03	7440-50-8	
Lead, Dissolved	0.12J	ug/L	1.0	0.030	1	07/03/13 10:00	07/08/13 15:03	7439-92-1	B
Manganese, Dissolved	1730	ug/L	1.0	0.14	1	07/03/13 10:00	07/08/13 15:03	7439-96-5	D9
Nickel, Dissolved	3.6	ug/L	1.0	0.070	1	07/03/13 10:00	07/08/13 15:03	7440-02-0	D9
Selenium, Dissolved	0.36J	ug/L	1.0	0.14	1	07/03/13 10:00	07/08/13 15:03	7782-49-2	B
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/08/13 10:30	07/08/13 14:48	7439-97-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60148080

Sample: DR3A1307010400 Lab ID: 60148080003 Collected: 07/01/13 04:00 Received: 07/02/13 10:15 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/08/13 10:30	07/09/13 09:22	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	104	mg/L	20.0	1.2	1		07/05/13 11:58		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/05/13 11:58		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/05/13 11:58		
Alkalinity, Total as CaCO ₃	104	mg/L	20.0	1.2	1		07/05/13 11:58		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	ND	mg/L	1.0	0.090	1		07/09/13 18:23	24959-67-9	
Chloride	0.85J	mg/L	1.0	0.50	1		07/09/13 18:23	16887-00-6	
Fluoride	2.1	mg/L	0.20	0.047	1		07/09/13 18:23	16984-48-8	
Sulfate	623	mg/L	100	16.0	100		07/10/13 12:06	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60148080

QC Batch: MERP/7484 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60148080001, 60148080002, 60148080003

METHOD BLANK: 1216523 Matrix: Water

Associated Lab Samples: 60148080001, 60148080002, 60148080003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	07/08/13 14:30	

LABORATORY CONTROL SAMPLE: 1216524

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.6	93	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1216525 1216526

Parameter	Units	60147147001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.3	5.7	84	112	70-130	29	20	R1

MATRIX SPIKE SAMPLE: 1216527

Parameter	Units	60148080001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	ND	5	4.2	84	70-130	

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60148080

QC Batch: MERP/7483 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury - Dissolved
Associated Lab Samples: 60148080001, 60148080002, 60148080003

METHOD BLANK: 1216519 Matrix: Water

Associated Lab Samples: 60148080001, 60148080002, 60148080003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	07/08/13 15:31	

LABORATORY CONTROL SAMPLE: 1216520

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	4.8	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1216521 1216522

Parameter	Units	60148080001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury, Dissolved	ug/L	ND	5	5	4.7	4.8	95	96	70-130	1	20	

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60148080

QC Batch: MPRP/23346 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60148080001, 60148080002, 60148080003

METHOD BLANK: 1215103 Matrix: Water

Associated Lab Samples: 60148080001, 60148080002, 60148080003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	07/08/13 12:15	
Calcium	ug/L	ND	100	07/08/13 12:15	
Iron	ug/L	ND	50.0	07/08/13 12:15	
Lithium	ug/L	ND	10.0	07/08/13 12:15	
Magnesium	ug/L	ND	50.0	07/08/13 12:15	
Potassium	ug/L	ND	500	07/08/13 12:15	
Silicon	ug/L	ND	500	07/08/13 12:15	
Sodium	ug/L	48.3J	500	07/08/13 12:15	
Zinc	ug/L	ND	50.0	07/08/13 12:15	

LABORATORY CONTROL SAMPLE: 1215104

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	10000	100	85-115	
Calcium	ug/L	10000	10000	100	85-115	
Iron	ug/L	10000	10000	100	85-115	
Lithium	ug/L	1000	986	99	85-115	
Magnesium	ug/L	10000	10300	103	85-115	
Potassium	ug/L	10000	10100	101	85-115	
Silicon	ug/L	5000	4950	99	85-115	
Sodium	ug/L	10000	10200	102	85-115	
Zinc	ug/L	1000	1010	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1215105 1215106

Parameter	Units	60148080001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	631	10000	10000	10600	10900	99	103	70-130	3	8	
Calcium	ug/L	249000	10000	10000	243000	265000	-62	166	70-130	9	9 M1	
Iron	ug/L	6240	10000	10000	15700	16500	95	103	70-130	5	10	
Lithium	ug/L	27.5	1000	1000	1010	1020	98	99	70-130	1	20	
Magnesium	ug/L	20700	10000	10000	29100	31100	84	104	70-130	7	9	
Potassium	ug/L	5770	10000	10000	15800	16400	100	106	70-130	4	7	
Silicon	ug/L	8300	5000	5000	12700	13600	88	105	70-130	7	5 R1	
Sodium	ug/L	27600	10000	10000	36300	38100	87	104	70-130	5	8	
Zinc	ug/L	4220	1000	1000	4980	5230	77	101	70-130	5	11	

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60148080

QC Batch: MPRP/23344

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60148080001, 60148080002, 60148080003

METHOD BLANK: 1215095

Matrix: Water

Associated Lab Samples: 60148080001, 60148080002, 60148080003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	07/08/13 12:53	
Calcium, Dissolved	ug/L	26.4J	100	07/08/13 12:53	
Iron, Dissolved	ug/L	ND	50.0	07/08/13 12:53	
Lithium, Dissolved	ug/L	ND	10.0	07/08/13 12:53	
Magnesium, Dissolved	ug/L	ND	50.0	07/08/13 12:53	
Potassium, Dissolved	ug/L	ND	500	07/08/13 12:53	
Silicon, Dissolved	ug/L	ND	500	07/08/13 12:53	
Sodium, Dissolved	ug/L	51.4J	500	07/08/13 12:53	
Zinc, Dissolved	ug/L	ND	50.0	07/08/13 12:53	

LABORATORY CONTROL SAMPLE: 1215096

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	10300	103	85-115	
Calcium, Dissolved	ug/L	10000	10300	103	85-115	
Iron, Dissolved	ug/L	10000	10300	103	85-115	
Lithium, Dissolved	ug/L	1000	1010	101	85-115	
Magnesium, Dissolved	ug/L	10000	10300	103	85-115	
Potassium, Dissolved	ug/L	10000	10500	105	85-115	
Silicon, Dissolved	ug/L	5000	5070	101	85-115	
Sodium, Dissolved	ug/L	10000	10600	106	85-115	
Zinc, Dissolved	ug/L	1000	1040	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1215097

1215098

Parameter	Units	60148080001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	62.4J	10000	10000	10400	10000	103	100	70-130	3	8	
Calcium, Dissolved	ug/L	250000	10000	10000	260000	247000	97	-24	70-130	5	9 M1	
Iron, Dissolved	ug/L	ND	10000	10000	10200	9780	102	98	70-130	4	10	
Lithium, Dissolved	ug/L	27.0	1000	1000	1020	996	100	97	70-130	3	20	
Magnesium, Dissolved	ug/L	20000	10000	10000	29900	29300	98	93	70-130	2	9	
Potassium, Dissolved	ug/L	5740	10000	10000	16100	15700	104	100	70-130	3	7	
Silicon, Dissolved	ug/L	7360	5000	5000	12500	12000	103	93	70-130	4	5	
Sodium, Dissolved	ug/L	27400	10000	10000	37100	36200	97	88	70-130	2	8	
Zinc, Dissolved	ug/L	3420	1000	1000	4490	4330	106	91	70-130	4	11	

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60148080

QC Batch: MPRP/23347 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60148080001, 60148080002, 60148080003

METHOD BLANK: 1215107 Matrix: Water

Associated Lab Samples: 60148080001, 60148080002, 60148080003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	07/08/13 16:31	
Cadmium	ug/L	ND	0.50	07/08/13 16:31	
Chromium	ug/L	0.085J	1.0	07/08/13 16:31	
Cobalt	ug/L	ND	1.0	07/08/13 16:31	
Copper	ug/L	0.30J	1.0	07/08/13 16:31	
Lead	ug/L	0.11J	1.0	07/08/13 16:31	
Manganese	ug/L	0.44J	1.0	07/08/13 16:31	
Nickel	ug/L	ND	1.0	07/08/13 16:31	
Selenium	ug/L	0.23J	1.0	07/08/13 16:31	

LABORATORY CONTROL SAMPLE: 1215108

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	38.2	96	85-115	
Cadmium	ug/L	40	39.8	99	85-115	
Chromium	ug/L	40	38.4	96	85-115	
Cobalt	ug/L	40	37.9	95	85-115	
Copper	ug/L	40	37.4	93	85-115	
Lead	ug/L	40	38.1	95	85-115	
Manganese	ug/L	40	39.2	98	85-115	
Nickel	ug/L	40	37.1	93	85-115	
Selenium	ug/L	40	40.7	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1215109 1215110

Parameter	Units	60148080002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	0.56J	40	40	39.9	39.3	98	97	70-130	1	20	
Cadmium	ug/L	20.1	40	40	57.1	56.9	93	92	70-130	0	20	
Chromium	ug/L	0.20J	40	40	37.4	37.0	93	92	70-130	1	20	
Cobalt	ug/L	2.4	40	40	38.3	37.9	90	89	70-130	1	20	
Copper	ug/L	91.7	40	40	124	122	81	77	70-130	2	20	
Lead	ug/L	5.9	40	40	43.6	43.6	94	94	70-130	0	20	
Manganese	ug/L	1810	40	40	1770	1760	-95	-118	70-130	1	20 M1	
Nickel	ug/L	3.5	40	40	38.5	38.3	87	87	70-130	0	20	
Selenium	ug/L	0.38J	40	40	40.6	40.3	101	100	70-130	1	20	

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60148080

QC Batch: MPRP/23345 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60148080001, 60148080002, 60148080003

METHOD BLANK: 1215099 Matrix: Water

Associated Lab Samples: 60148080001, 60148080002, 60148080003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	07/08/13 14:34	
Cadmium, Dissolved	ug/L	ND	0.50	07/08/13 14:34	
Chromium, Dissolved	ug/L	0.17J	1.0	07/08/13 14:34	
Cobalt, Dissolved	ug/L	ND	1.0	07/08/13 14:34	
Copper, Dissolved	ug/L	0.45J	1.0	07/08/13 14:34	
Lead, Dissolved	ug/L	0.097J	1.0	07/08/13 14:34	
Manganese, Dissolved	ug/L	0.63J	1.0	07/08/13 14:34	
Nickel, Dissolved	ug/L	ND	1.0	07/08/13 14:34	
Selenium, Dissolved	ug/L	0.24J	1.0	07/08/13 14:34	

LABORATORY CONTROL SAMPLE: 1215100

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	37.3	93	85-115	
Cadmium, Dissolved	ug/L	40	39.5	99	85-115	
Chromium, Dissolved	ug/L	40	37.9	95	85-115	
Cobalt, Dissolved	ug/L	40	37.0	93	85-115	
Copper, Dissolved	ug/L	40	36.5	91	85-115	
Lead, Dissolved	ug/L	40	38.3	96	85-115	
Manganese, Dissolved	ug/L	40	39.3	98	85-115	
Nickel, Dissolved	ug/L	40	36.5	91	85-115	
Selenium, Dissolved	ug/L	40	40.3	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1215101 1215102

Parameter	Units	60148080002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	ND	40	40	39.4	39.2	99	98	70-130	1	20	
Cadmium, Dissolved	ug/L	17.5	40	40	55.9	55.0	96	94	70-130	2	20	
Chromium, Dissolved	ug/L	ND	40	40	37.1	37.1	93	93	70-130	0	20	
Cobalt, Dissolved	ug/L	3.9	40	40	39.8	39.5	90	89	70-130	1	20	
Copper, Dissolved	ug/L	4.5	40	40	38.6	38.1	85	84	70-130	1	20	
Lead, Dissolved	ug/L	0.095J	40	40	38.2	38.1	95	95	70-130	0	20	
Manganese, Dissolved	ug/L	1790	40	40	1810	1790	52	-8	70-130	1	20 M1	
Nickel, Dissolved	ug/L	3.8	40	40	38.4	38.5	86	87	70-130	0	20	
Selenium, Dissolved	ug/L	0.34J	40	40	41.8	41.6	104	103	70-130	0	20	

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60148080

QC Batch: WET/42199 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60148080001, 60148080002, 60148080003

METHOD BLANK: 1215720 Matrix: Water

Associated Lab Samples: 60148080001, 60148080002, 60148080003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	07/05/13 11:19	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	07/05/13 11:19	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	07/05/13 11:19	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	07/05/13 11:19	

LABORATORY CONTROL SAMPLE: 1215721

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	486	97	90-110	

SAMPLE DUPLICATE: 1215724

Parameter	Units	60148080001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND			10 H1
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND			10 H1
Alkalinity, Total as CaCO ₃	mg/L	94.0	95.6	2		10 H1
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	94.0	95.6	2		10 H1

SAMPLE DUPLICATE: 1215725

Parameter	Units	60147780002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND			10
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND			10
Alkalinity, Total as CaCO ₃	mg/L	439	455	3		10
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	439	455	3		10

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60148080

QC Batch: WETA/25382 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60148080001, 60148080002, 60148080003

METHOD BLANK: 1216815 Matrix: Water

Associated Lab Samples: 60148080001, 60148080002, 60148080003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	07/09/13 10:27	
Chloride	mg/L	ND	1.0	07/09/13 10:27	
Fluoride	mg/L	ND	0.20	07/09/13 10:27	

METHOD BLANK: 1217539 Matrix: Water

Associated Lab Samples: 60148080001, 60148080002, 60148080003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.0	07/10/13 09:05	

LABORATORY CONTROL SAMPLE: 1216816

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.8	96	90-110	
Chloride	mg/L	5	4.7	94	90-110	
Fluoride	mg/L	2.5	2.3	94	90-110	

LABORATORY CONTROL SAMPLE: 1217540

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	4.7	95	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1216817 1216818

Parameter	Units	60147585001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Bromide	mg/L	ND	10	10	10.7	10.6	90	89	75-119	1	10
Chloride	mg/L	28.7	10	10	38.6	38.4	99	97	64-118	1	12
Fluoride	mg/L	ND	5	5	4.9	5.0	91	91	75-110	0	10
Sulfate	mg/L	231	250	250	453	462	89	92	61-119	2	10

MATRIX SPIKE SAMPLE: 1216819

Parameter	Units	60147759002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	2.0	5	6.4	88	75-119	

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60148080

MATRIX SPIKE SAMPLE:		1216819					
Parameter	Units	60147759002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	292	250	522	92	64-118	
Fluoride	mg/L	1.9	2.5	4.3	97	75-110	
Sulfate	mg/L	129	50	174	91	61-119	

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60148080

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

H1 Analysis conducted outside the EPA method holding time.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

R1 RPD value was outside control limits.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60148080

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60148080001	DR3A1306290400	EPA 200.7	MPRP/23346	EPA 200.7	ICP/18383
60148080002	DR3A1306300400	EPA 200.7	MPRP/23346	EPA 200.7	ICP/18383
60148080003	DR3A1307010400	EPA 200.7	MPRP/23346	EPA 200.7	ICP/18383
60148080001	DR3A1306290400	EPA 200.7	MPRP/23344	EPA 200.7	ICP/18382
60148080002	DR3A1306300400	EPA 200.7	MPRP/23344	EPA 200.7	ICP/18382
60148080003	DR3A1307010400	EPA 200.7	MPRP/23344	EPA 200.7	ICP/18382
60148080001	DR3A1306290400	EPA 200.8	MPRP/23347	EPA 200.8	ICPM/2369
60148080002	DR3A1306300400	EPA 200.8	MPRP/23347	EPA 200.8	ICPM/2369
60148080003	DR3A1307010400	EPA 200.8	MPRP/23347	EPA 200.8	ICPM/2369
60148080001	DR3A1306290400	EPA 200.8	MPRP/23345	EPA 200.8	ICPM/2368
60148080002	DR3A1306300400	EPA 200.8	MPRP/23345	EPA 200.8	ICPM/2368
60148080003	DR3A1307010400	EPA 200.8	MPRP/23345	EPA 200.8	ICPM/2368
60148080001	DR3A1306290400	EPA 245.1	MERP/7484	EPA 245.1	MERC/7440
60148080002	DR3A1306300400	EPA 245.1	MERP/7484	EPA 245.1	MERC/7440
60148080003	DR3A1307010400	EPA 245.1	MERP/7484	EPA 245.1	MERC/7440
60148080001	DR3A1306290400	EPA 245.1	MERP/7483	EPA 245.1	MERC/7441
60148080002	DR3A1306300400	EPA 245.1	MERP/7483	EPA 245.1	MERC/7441
60148080003	DR3A1307010400	EPA 245.1	MERP/7483	EPA 245.1	MERC/7441
60148080001	DR3A1306290400	SM 2320B	WET/42199		
60148080002	DR3A1306300400	SM 2320B	WET/42199		
60148080003	DR3A1307010400	SM 2320B	WET/42199		
60148080001	DR3A1306290400	EPA 300.0	WETA/25382		
60148080002	DR3A1306300400	EPA 300.0	WETA/25382		
60148080003	DR3A1307010400	EPA 300.0	WETA/25382		

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Sample Condition Upon Receipt
ESI Tech Spec Client

WO#: 60148080



60148080

Client Name: BP AMEC

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 1Z 733 W87 22 1006 0925

Pace Shipping Label Used? Yes ☒ No ☐

Custody Seal on Cooler/Box Present: Yes ☒ No ☐

Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other PEPIC

Thermometer Used: T-112 / T-194

Type of Ice: Yes Blue None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 0.6/2.2

Date and initials of person examining contents: pu 7/2/13

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6. TSS
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.
Unpreserved 5035A soils frozen w/in 48hrs? <u>pu 7/2/13</u>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Includes date/time/ID/analyses Matrix: <u>WT</u>		15.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	16.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	17.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:

Client Notification/ Resolution:

Copy COC to Client? Y / N

Field Data Required? Y / N

Person Contacted: Lynda Lombardi Date/Time: 7/2/13

Comments/ Resolution: Email - should samples be separated per COCs? dmw 7/2/13

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: <u>1105</u>	Start:
End: <u>1110</u>	End:
Temp:	Temp:

Project Manager Review: dmw

Date: 7/2/13



Laboratory Management Program LaMP Chain of Custody Record

Page 1 of 3BP/ARC Project Name: Rico-Argentine Mine Site

Req Due Date (mm/dd/yy): _____

Rush TAT: Yes X No _____

BP/ARC Facility No: _____

Lab Work Order Number: _____

Lab Name: Pace Analytical Laboratories, Inc.				BP/ARC Facility Address: Rico-Argentine Mine				Consultant/Contractor: AMEC E&I, Inc.													
Lab Address: 9608 Loiret Blvd., Lenexa, KS 66219				City, State, ZIP Code: Rico, Colorado				Consultant/Contractor Project No: SA11161313.300H													
Lab PM: Heather Wilson				Lead Regulatory Agency: U.S. EPA Region 8				Address: 10670 White Rock Road, Suite 100, Rancho Cordova, CA													
Lab Phone: (913) 563-1407				California Global ID No.: NA				Consultant/Contractor PM: Marc Lombardi													
Lab Shipping Acct: UPS # 733W87				Enfos Proposal No: D00LL-0010 WR 266494				Phone: 916-636-3200													
Lab Bottle Order No: NA				Accounting Mode: Provision <u>X</u> OOC-BU _____ OOC-RM _____				Email Report/EDD To: lynda.lombardi@amec.com													
Other Info: 2013 517 Injection Treatability Study				Stage: 4-Execute Activity: Spend				Invoice To: BP/ARC <u>X</u> Contractor _____													
BP/ARC EBM: Anthony Brown				Matrix		No. Containers / Preservative		Requested Analyses						Report Type & QC Level							
EBM Phone: 714-228-6770														Standard <u>X</u>							
EBM Email: anthony.brown@bp.com														Full Data Package _____							
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Methanol	Tot Metals-see notes (E200.7/200.8/E245.1)	Dis Metals-see notes (E200.7/200.8/E245.1)	Alkalinity-Total HCO ₃ , CO ₃ , OH (SM2320B)	Bromide (E300.0)	Chloride (E300.0)	Fluoride (E300.0)	Sulfate (E300.0)	Comments	
	DR3A130629 0400	6/29/13	400	X			3	1		2			X	X	X	X	X	X	X	X	Dissolved metals samples are field filtered
	DR3A1306300400	6/30/13	400	X			3	1		2			X	X	X	X	X	X	X	X	
	DR3A130607010400	7/1/13	400	X			3	1		2			X	X	X	X	X	X	X	X	Metals are: Al, Ca, Fe, K, Li, Na, Mg, Si, Zn (E200.7); As, Cd, Co, Cr, Cu, Mn, Ni, Pb, Se (E200.8); and Hg (E245.1)
RUSH 5-day TAT																					
Sampler's Name: <u>Kyrah Wyatt</u>				Relinquished By / Affiliation: <u>Kyrah Wyatt / AMEC</u>				Date: <u>7/1/13</u>		Time: <u>1500</u>		Accepted By / Affiliation: <u>PAC</u>				Date: <u>7/2/13</u>		Time: <u>1015</u>			
Sampler's Company: <u>AMEC</u>																					
Shipment Method: <u>UPS</u> Ship Date: <u>7/1/13</u>																					
Shipment Tracking No: <u>1Z 733 W87 22 1006 0416</u> <u>1Z 733 W87 22 1006 0425</u>																					
Special Instructions:																					
THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No Temp Blank: Yes / No Cooler Temp on Receipt: <u>0.6</u> °F/C Trip Blank: Yes / No MS/MSD Sample Submitted: Yes / No																					

July 12, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: Rico-Argentine Mine Site
Pace Project No.: 60148284

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on July 05, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148284

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Rico-Argentine Mine Site

Pace Project No.: 60148284

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60148284001	DR3A1307020400	Water	07/02/13 04:00	07/05/13 10:50

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Rico-Argentine Mine Site

Pace Project No.: 60148284

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60148284001	DR3A1307020400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148284

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: July 12, 2013

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23395

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60148284001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1216719)
- Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148284

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: July 12, 2013

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23402

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60148284001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1217168)
 - Calcium, Dissolved
- MSD (Lab ID: 1217169)
 - Calcium, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148284

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: July 12, 2013

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23404

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60148379001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1217176)
 - Manganese
- MSD (Lab ID: 1217177)
 - Manganese

Additional Comments:

Analyte Comments:

QC Batch: MPRP/23404

- DR3A1307020400 (Lab ID: 60148284001)
 - Cobalt
 - Manganese

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148284

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: July 12, 2013

Analyte Comments:

QC Batch: MPRP/23404

- DR3A1307020400 (Lab ID: 60148284001)
 - Nickel

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60148284

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: July 12, 2013

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23403

B: Analyte was detected in the associated method blank.

- BLANK for HBN 298031 [MPRP/234 (Lab ID: 1217170)]
 - Chromium, Dissolved
 - Lead, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23403

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60148379001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1217172)
 - Manganese, Dissolved
- MSD (Lab ID: 1217173)
 - Manganese, Dissolved

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148284

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: July 12, 2013

General Information:

1 sample was analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MERP/7484

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60147147001,60148080001

R1: RPD value was outside control limits.

- MSD (Lab ID: 1216526)
- Mercury

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148284

Method: EPA 245.1

Description: 245.1 Mercury, Dissolved

Client: BP AMEC

Date: July 12, 2013

General Information:

1 sample was analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148284

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: July 12, 2013

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148284

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: July 12, 2013

General Information:

1 sample was analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148284

Sample: DR3A1307020400 Lab ID: 60148284001 Collected: 07/02/13 04:00 Received: 07/05/13 10:50 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	440	ug/L	75.0	16.6	1	07/08/13 17:25	07/10/13 12:53	7429-90-5	M1
Calcium	222000	ug/L	100	10.4	1	07/08/13 17:25	07/10/13 14:43	7440-70-2	
Iron	4450	ug/L	50.0	11.6	1	07/08/13 17:25	07/10/13 12:53	7439-89-6	
Lithium	25.9	ug/L	10.0	2.4	1	07/08/13 17:25	07/10/13 12:53	7439-93-2	
Magnesium	18700	ug/L	50.0	6.5	1	07/08/13 17:25	07/10/13 12:53	7439-95-4	
Potassium	5460	ug/L	500	44.4	1	07/08/13 17:25	07/10/13 12:53	7440-09-7	
Silicon	7020	ug/L	500	23.9	1	07/08/13 17:25	07/10/13 12:53	7440-21-3	
Sodium	30600	ug/L	500	21.7	1	07/08/13 17:25	07/10/13 12:53	7440-23-5	
Zinc	3470	ug/L	50.0	3.3	1	07/08/13 17:25	07/10/13 12:53	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	56.2J	ug/L	75.0	16.6	1	07/09/13 16:30	07/10/13 13:09	7429-90-5	D9,M1
Calcium, Dissolved	230000	ug/L	100	10.4	1	07/09/13 16:30	07/10/13 14:59	7440-70-2	
Iron, Dissolved	22.2J	ug/L	50.0	11.6	1	07/09/13 16:30	07/10/13 13:09	7439-89-6	
Lithium, Dissolved	27.5	ug/L	10.0	2.4	1	07/09/13 16:30	07/10/13 13:09	7439-93-2	D9
Magnesium, Dissolved	19400	ug/L	50.0	6.5	1	07/09/13 16:30	07/10/13 13:09	7439-95-4	D9
Potassium, Dissolved	5150	ug/L	500	44.4	1	07/09/13 16:30	07/10/13 13:09	7440-09-7	
Silicon, Dissolved	6860	ug/L	500	23.9	1	07/09/13 16:30	07/10/13 13:09	7440-21-3	
Sodium, Dissolved	30500	ug/L	500	21.7	1	07/09/13 16:30	07/10/13 13:09	7440-23-5	
Zinc, Dissolved	3440	ug/L	50.0	3.3	1	07/09/13 16:30	07/10/13 13:09	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.59J	ug/L	1.0	0.050	1	07/09/13 16:30	07/11/13 12:43	7440-38-2	
Cadmium	19.5	ug/L	0.50	0.050	1	07/09/13 16:30	07/11/13 12:43	7440-43-9	
Chromium	0.45J	ug/L	1.0	0.070	1	07/09/13 16:30	07/11/13 12:43	7440-47-3	
Cobalt	2.4	ug/L	1.0	0.080	1	07/09/13 16:30	07/11/13 12:43	7440-48-4	
Copper	88.2	ug/L	1.0	0.12	1	07/09/13 16:30	07/11/13 12:43	7440-50-8	
Lead	5.8	ug/L	1.0	0.030	1	07/09/13 16:30	07/11/13 12:43	7439-92-1	
Manganese	1760	ug/L	1.0	0.14	1	07/09/13 16:30	07/11/13 12:43	7439-96-5	
Nickel	3.8	ug/L	1.0	0.070	1	07/09/13 16:30	07/11/13 12:43	7440-02-0	
Selenium	ND	ug/L	1.0	0.14	1	07/09/13 16:30	07/11/13 12:43	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.072J	ug/L	1.0	0.050	1	07/09/13 16:30	07/11/13 11:24	7440-38-2	
Cadmium, Dissolved	18.4	ug/L	0.50	0.050	1	07/09/13 16:30	07/11/13 11:24	7440-43-9	
Chromium, Dissolved	0.32J	ug/L	1.0	0.070	1	07/09/13 16:30	07/11/13 11:24	7440-47-3	B
Cobalt, Dissolved	3.6	ug/L	1.0	0.080	1	07/09/13 16:30	07/11/13 11:24	7440-48-4	D9
Copper, Dissolved	6.9	ug/L	1.0	0.12	1	07/09/13 16:30	07/11/13 11:24	7440-50-8	
Lead, Dissolved	0.27J	ug/L	1.0	0.030	1	07/09/13 16:30	07/11/13 11:24	7439-92-1	B
Manganese, Dissolved	1820	ug/L	1.0	0.14	1	07/09/13 16:30	07/11/13 11:24	7439-96-5	D9
Nickel, Dissolved	4.3	ug/L	1.0	0.070	1	07/09/13 16:30	07/11/13 11:24	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	07/09/13 16:30	07/11/13 11:24	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/08/13 10:30	07/08/13 15:07	7439-97-6	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148284

Sample: DR3A1307020400		Lab ID: 60148284001		Collected: 07/02/13 04:00		Received: 07/05/13 10:50		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/08/13 10:30	07/09/13 09:34	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	94.2	mg/L	20.0	1.2	1		07/12/13 08:37		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/12/13 08:37		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/12/13 08:37		
Alkalinity, Total as CaCO ₃	94.2	mg/L	20.0	1.2	1		07/12/13 08:37		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.090	1		07/12/13 12:06	24959-67-9	
Chloride	0.82J	mg/L	1.0	0.50	1		07/12/13 12:06	16887-00-6	
Fluoride	2.4	mg/L	0.20	0.047	1		07/12/13 12:06	16984-48-8	
Sulfate	785	mg/L	100	16.0	100		07/12/13 12:21	14808-79-8	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60148284

QC Batch: MERP/7484 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60148284001

METHOD BLANK: 1216523 Matrix: Water
Associated Lab Samples: 60148284001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	07/08/13 14:30	

LABORATORY CONTROL SAMPLE: 1216524

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.6	93	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1216525 1216526

Parameter	Units	60147147001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.3	5.7	84	112	70-130	29	20	R1

MATRIX SPIKE SAMPLE: 1216527

Parameter	Units	60148080001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	ND	5	4.2	84	70-130	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148284

QC Batch: MERP/7483

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury - Dissolved

Associated Lab Samples: 60148284001

METHOD BLANK: 1216519

Matrix: Water

Associated Lab Samples: 60148284001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	07/08/13 15:31	

LABORATORY CONTROL SAMPLE: 1216520

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	4.8	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1216521 1216522

Parameter	Units	60148080001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury, Dissolved	ug/L	ND	5	5	4.7	4.8	95	96	70-130	1	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60148284

QC Batch: MPRP/23395 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60148284001

METHOD BLANK: 1216717 Matrix: Water
Associated Lab Samples: 60148284001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	07/10/13 12:47	
Calcium	ug/L	28.8J	100	07/10/13 14:37	
Iron	ug/L	11.8J	50.0	07/10/13 12:47	
Lithium	ug/L	ND	10.0	07/10/13 12:47	
Magnesium	ug/L	ND	50.0	07/10/13 12:47	
Potassium	ug/L	226J	500	07/10/13 14:37	
Silicon	ug/L	46.3J	500	07/10/13 12:47	
Sodium	ug/L	130J	500	07/10/13 12:47	
Zinc	ug/L	5.7J	50.0	07/10/13 12:47	

LABORATORY CONTROL SAMPLE: 1216718

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	10300	103	85-115	
Calcium	ug/L	10000	9510	95	85-115	
Iron	ug/L	10000	9480	95	85-115	
Lithium	ug/L	1000	1040	104	85-115	
Magnesium	ug/L	10000	9950	100	85-115	
Potassium	ug/L	10000	11000	110	85-115	
Silicon	ug/L	5000	4620	92	85-115	
Sodium	ug/L	10000	10800	108	85-115	
Zinc	ug/L	1000	974	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1216719 1216720

Parameter	Units	60148284001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	440	10000	10000	10600	10700	102	102	70-130	0	8	
Calcium	ug/L	222000	10000	10000	227000	231000	58	95	70-130	2	9 M1	
Iron	ug/L	4450	10000	10000	13600	13800	92	93	70-130	1	10	
Lithium	ug/L	25.9	1000	1000	1080	1090	106	107	70-130	1	20	
Magnesium	ug/L	18700	10000	10000	28100	28000	94	93	70-130	0	9	
Potassium	ug/L	5460	10000	10000	16100	16200	107	107	70-130	0	7	
Silicon	ug/L	7020	5000	5000	11600	11700	92	94	70-130	1	5	
Sodium	ug/L	30600	10000	10000	41000	41300	103	106	70-130	1	8	
Zinc	ug/L	3470	1000	1000	4400	4390	92	92	70-130	0	11	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60148284

QC Batch:	MPRP/23402	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Dissolved
Associated Lab Samples:	60148284001		

METHOD BLANK: 1217166 Matrix: Water
Associated Lab Samples: 60148284001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	07/10/13 13:24	
Calcium, Dissolved	ug/L	ND	100	07/10/13 15:15	
Iron, Dissolved	ug/L	ND	50.0	07/10/13 13:24	
Lithium, Dissolved	ug/L	ND	10.0	07/10/13 13:24	
Magnesium, Dissolved	ug/L	ND	50.0	07/10/13 13:24	
Potassium, Dissolved	ug/L	ND	500	07/10/13 13:24	
Silicon, Dissolved	ug/L	ND	500	07/10/13 13:24	
Sodium, Dissolved	ug/L	51.5J	500	07/10/13 13:24	
Zinc, Dissolved	ug/L	ND	50.0	07/10/13 13:24	

LABORATORY CONTROL SAMPLE: 1217167

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	10300	103	85-115	
Calcium, Dissolved	ug/L	10000	9540	95	85-115	
Iron, Dissolved	ug/L	10000	9540	95	85-115	
Lithium, Dissolved	ug/L	1000	1030	103	85-115	
Magnesium, Dissolved	ug/L	10000	9950	99	85-115	
Potassium, Dissolved	ug/L	10000	10800	108	85-115	
Silicon, Dissolved	ug/L	5000	4670	93	85-115	
Sodium, Dissolved	ug/L	10000	10800	108	85-115	
Zinc, Dissolved	ug/L	1000	982	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1217168 1217169

Parameter	Units	60148284001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	56.2J	10000	10000	10200	10500	101	105	70-130	4	8	
Calcium, Dissolved	ug/L	230000	10000	10000	231000	234000	16	37	70-130	1	9 M1	
Iron, Dissolved	ug/L	22.2J	10000	10000	9160	9510	91	95	70-130	4	10	
Lithium, Dissolved	ug/L	27.5	1000	1000	1080	1100	105	107	70-130	2	20	
Magnesium, Dissolved	ug/L	19400	10000	10000	28400	29000	90	96	70-130	2	9	
Potassium, Dissolved	ug/L	5150	10000	10000	15700	16300	106	111	70-130	3	7	
Silicon, Dissolved	ug/L	6860	5000	5000	11200	11500	87	94	70-130	3	5	
Sodium, Dissolved	ug/L	30500	10000	10000	40200	41200	97	107	70-130	2	8	
Zinc, Dissolved	ug/L	3440	1000	1000	4290	4360	84	91	70-130	2	11	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60148284

QC Batch: MPRP/23404 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60148284001

METHOD BLANK: 1217174 Matrix: Water
Associated Lab Samples: 60148284001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	07/11/13 12:35	
Cadmium	ug/L	ND	0.50	07/11/13 12:35	
Chromium	ug/L	ND	1.0	07/11/13 12:35	
Cobalt	ug/L	ND	1.0	07/11/13 12:35	
Copper	ug/L	ND	1.0	07/11/13 12:35	
Lead	ug/L	0.22J	1.0	07/11/13 12:35	
Manganese	ug/L	ND	1.0	07/11/13 12:35	
Nickel	ug/L	ND	1.0	07/11/13 12:35	
Selenium	ug/L	ND	1.0	07/11/13 12:35	

LABORATORY CONTROL SAMPLE: 1217175

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	39.9	100	85-115	
Cadmium	ug/L	40	40.5	101	85-115	
Chromium	ug/L	40	40.4	101	85-115	
Cobalt	ug/L	40	39.9	100	85-115	
Copper	ug/L	40	40.2	100	85-115	
Lead	ug/L	40	39.8	100	85-115	
Manganese	ug/L	40	40.4	101	85-115	
Nickel	ug/L	40	39.4	99	85-115	
Selenium	ug/L	40	40.2	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1217176 1217177

Parameter	Units	60148379001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	0.54J	40	40	40.9	41.2	101	102	70-130	1	20	
Cadmium	ug/L	19.5	40	40	58.9	59.1	98	99	70-130	0	20	
Chromium	ug/L	0.48J	40	40	39.2	39.2	97	97	70-130	0	20	
Cobalt	ug/L	2.4	40	40	40.5	40.5	95	95	70-130	0	20	
Copper	ug/L	83.0	40	40	119	121	89	94	70-130	2	20	
Lead	ug/L	5.2	40	40	44.4	44.6	98	98	70-130	0	20	
Manganese	ug/L	1760	40	40	1770	1810	38	132	70-130	2	20 M1	
Nickel	ug/L	4.2	40	40	41.3	41.8	93	94	70-130	1	20	
Selenium	ug/L	ND	40	40	40.2	40.8	100	102	70-130	1	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60148284

QC Batch: MPRP/23403 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60148284001

METHOD BLANK: 1217170 Matrix: Water
Associated Lab Samples: 60148284001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	07/11/13 11:16	
Cadmium, Dissolved	ug/L	ND	0.50	07/11/13 11:16	
Chromium, Dissolved	ug/L	0.15J	1.0	07/11/13 11:16	
Cobalt, Dissolved	ug/L	ND	1.0	07/11/13 11:16	
Copper, Dissolved	ug/L	0.20J	1.0	07/11/13 11:16	
Lead, Dissolved	ug/L	0.22J	1.0	07/11/13 11:16	
Manganese, Dissolved	ug/L	ND	1.0	07/11/13 11:16	
Nickel, Dissolved	ug/L	ND	1.0	07/11/13 11:16	
Selenium, Dissolved	ug/L	ND	1.0	07/11/13 11:16	

LABORATORY CONTROL SAMPLE: 1217171

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	39.5	99	85-115	
Cadmium, Dissolved	ug/L	40	40.0	100	85-115	
Chromium, Dissolved	ug/L	40	40.9	102	85-115	
Cobalt, Dissolved	ug/L	40	39.9	100	85-115	
Copper, Dissolved	ug/L	40	40.6	102	85-115	
Lead, Dissolved	ug/L	40	39.1	98	85-115	
Manganese, Dissolved	ug/L	40	40.2	100	85-115	
Nickel, Dissolved	ug/L	40	40.2	101	85-115	
Selenium, Dissolved	ug/L	40	39.3	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1217172 1217173

Parameter	Units	60148379001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	0.10J	40	40	41.5	41.1	104	103	70-130	1	20	
Cadmium, Dissolved	ug/L	18.2	40	40	58.3	58.0	100	100	70-130	1	20	
Chromium, Dissolved	ug/L	0.52J	40	40	39.9	39.7	98	98	70-130	0	20	
Cobalt, Dissolved	ug/L	3.6	40	40	42.3	42.3	97	97	70-130	0	20	
Copper, Dissolved	ug/L	6.4	40	40	44.1	43.8	94	93	70-130	1	20	
Lead, Dissolved	ug/L	0.28J	40	40	39.6	39.3	98	98	70-130	1	20	
Manganese, Dissolved	ug/L	1780	40	40	1850	1870	168	208	70-130	1	20 M1	
Nickel, Dissolved	ug/L	4.3	40	40	42.6	42.1	96	95	70-130	1	20	
Selenium, Dissolved	ug/L	ND	40	40	41.6	40.5	104	101	70-130	3	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60148284

QC Batch: WET/42308 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60148284001

METHOD BLANK: 1218645 Matrix: Water
Associated Lab Samples: 60148284001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	07/12/13 08:33	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	07/12/13 08:33	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	07/12/13 08:33	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	07/12/13 08:33	

LABORATORY CONTROL SAMPLE: 1218646

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	506	101	90-110	

SAMPLE DUPLICATE: 1218649

Parameter	Units	60148348001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	526	526	0	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	526	526	0	10	

SAMPLE DUPLICATE: 1218650

Parameter	Units	60148416001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	381	384	1	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	381	384	1	10	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60148284

QC Batch: WETA/25418 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60148284001

METHOD BLANK: 1218761 Matrix: Water
Associated Lab Samples: 60148284001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	07/12/13 09:01	
Chloride	mg/L	ND	1.0	07/12/13 09:01	
Fluoride	mg/L	ND	0.20	07/12/13 09:01	
Sulfate	mg/L	ND	1.0	07/12/13 09:01	

LABORATORY CONTROL SAMPLE: 1218762

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.1	102	90-110	
Chloride	mg/L	5	4.9	98	90-110	
Fluoride	mg/L	2.5	2.6	104	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1218030 1218031

Parameter	Units	60147780001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	ND	1000	1000	1020	996	102	100	75-119	3	10	
Chloride	mg/L	927	1000	1000	1830	1810	90	89	64-118	1	12	
Fluoride	mg/L	ND	500	500	536	516	107	103	75-110	4	10	
Sulfate	mg/L	1430	1000	1000	2450	2440	102	101	61-119	0	10	

MATRIX SPIKE SAMPLE: 1218032

Parameter	Units	60147851004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	50	52.6	101	75-119	
Chloride	mg/L	946	500	1280	67	64-118	
Fluoride	mg/L	ND	25	24.2	89	75-110	
Sulfate	mg/L	134	50	177	86	61-119	

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148284

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

R1 RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148284

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60148284001	DR3A1307020400	EPA 200.7	MPRP/23395	EPA 200.7	ICP/18406
60148284001	DR3A1307020400	EPA 200.7	MPRP/23402	EPA 200.7	ICP/18414
60148284001	DR3A1307020400	EPA 200.8	MPRP/23404	EPA 200.8	ICPM/2375
60148284001	DR3A1307020400	EPA 200.8	MPRP/23403	EPA 200.8	ICPM/2376
60148284001	DR3A1307020400	EPA 245.1	MERP/7484	EPA 245.1	MERC/7440
60148284001	DR3A1307020400	EPA 245.1	MERP/7483	EPA 245.1	MERC/7441
60148284001	DR3A1307020400	SM 2320B	WET/42308		
60148284001	DR3A1307020400	EPA 300.0	WETA/25418		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt
ESI Tech Spec Client

WO#: 60148284



Client Name: BP Amec

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 1Z733WB72210062907 Pace Shipping Label Used? Yes ☒ No ☐

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☒ Bubble Bags ☐ Foam ☐ None ☐ Other ☐

Thermometer Used: T-112 / T-194

Type of Ice: Wet Blue ☐ None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 5.2

Date and initials of person examining
contents: 7/5/13 1110

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses	Matrix: <u>water</u>	13.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed <u>JMS</u> Lot # of added preservative
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank lot # (if purchased):	<u>n/a</u>	15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
		16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:

Client Notification/ Resolution:

Copy COC to Client? Y / N

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [Signature]

Date: 7/5/13

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: <u>1105</u>	Start:
End: <u>1115</u>	End:
Temp:	Temp:

Laboratory Management Program LaMP Chain of Custody Record

Page 1 of 2

BP/ARC Project Name: Rico-Argentine Mine Site

Req Due Date (mm/dd/yy): _____ Rush TAT: Yes X No _____

BP/ARC Facility No: _____

Lab Work Order Number: _____

Lab Name: Pace Analytical Laboratories, Inc.				BP/ARC Facility Address: Rico-Argentine Mine				Consultant/Contractor: AMEC E&I, Inc.			
Lab Address: 9608 Loiret Blvd., Lenexa, KS 66219				City, State, ZIP Code: Rico, Colorado				Consultant/Contractor Project No: SA11161313.300H			
Lab PM: Heather Wilson				Lead Regulatory Agency: U.S. EPA Region 8				Address: 10670 White Rock Road, Suite 100, Rancho Cordova, CA			
Lab Phone: (913) 563-1407				California Global ID No.: NA				Consultant/Contractor PM: Marc Lombardi			
Lab Shipping Acct: UPS # 733W87				Enfos Proposal No: D00LL-0010 WR 266494				Phone: 916-636-3200			
Lab Bottle Order No: NA				Accounting Mode: Provision <u>X</u> OOC-BU _____ OOC-RM _____				Email Report/EDD To: lynda.lombardi@amec.com			
Other Info: 2013 517 Injection Treatability Study				Stage: 4-Execute Activity: Spend				Invoice To: BP/ARC <u>X</u> Contractor _____			

BP/ARC EBM: Anthony Brown				Matrix		No. Containers / Preservative		Requested Analyses										Report Type & QC Level				
EBM Phone: 714-228-6770				Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Methanol	Tot Metals-see notes (E200.7/200.8/E245.1)	Dis Metals-see notes (E200.7/200.8/E245.1)	Alkalinity-Total HCO ₃ , CO ₃ , OH (SM2320B)	Bromide (E300.0)	Chloride (E300.0)	Fluoride (E300.0)	Sulfate (E300.0)	Standard <u>X</u>		
EBM Email: anthony.brown@bp.com																				Full Data Package _____		
Lab No.	Sample Description	Date	Time																		Comments	
	DR3A1307020400	7/2/13	400	X			3	1		2			X	X	X	X	X	X	X	X	1 (E200.7) (E200.8) (E245.1)	Dissolved metals samples are field filtered
																					Metals are: Al, Ca, Fe, K, Li, Na, Mg, Si,	
																					Zn (E200.7); As, Cd, Co, Cr, Cu, Mn, Ni,	
																					Pb, Se (E200.8); and Hg (E245.1)	
																					RUSH 5-day TAT	

Sampler's Name: <u>Kyle Wyatt</u>		Relinquished By / Affiliation		Date	Time	Accepted By / Affiliation		Date	Time
Sampler's Company: <u>AMEC</u>		<u>Kyle Wyatt / AMEC</u>		<u>7/2/13</u>	<u>1500</u>	<u>[Signature] / Pace</u>		<u>7/5/13</u>	<u>1050</u>
Shipment Method: <u>UPS</u>		Ship Date: <u>7/2/13</u>							
Shipment Tracking No: <u>1Z733W872210060907</u>									

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: (Yes) No Temp Blank: (Yes) No Cooler Temp on Receipt: 5.2 °F/C Trip Blank: Yes / No MS/MSD Sample Submitted: Yes / No

July 10, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: Rico-Argentine Mine Site
Pace Project No.: 60148288

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on July 02, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148288

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Rico-Argentine Mine Site

Pace Project No.: 60148288

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60148080010	DR3A1306271615	Water	06/27/13 16:15	07/02/13 10:15

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SAMPLE ANALYTE COUNT

Project: Rico-Argentine Mine Site

Pace Project No.: 60148288

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60148080010	DR3A1306271615	EPA 200.8	SMW	1
		EPA 200.8	SMW	1
		SM 2540D	NDL	1

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148288

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: July 10, 2013

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23347

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60148080002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1215109)
- Iron

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60148288

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: July 10, 2013

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148288

Method: SM 2540D

Description: 2540D Total Suspended Solids

Client: BP AMEC

Date: July 10, 2013

General Information:

1 sample was analyzed for SM 2540D. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148288

Sample: DR3A1306271615		Lab ID: 60148080010		Collected: 06/27/13 16:15		Received: 07/02/13 10:15		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS									
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Iron	7750	ug/L	50.0	3.0	1	07/03/13 00:00	07/08/13 17:04	7439-89-6	
200.8 MET ICPMS, Dissolved									
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Iron, Dissolved	21.0J	ug/L	50.0	3.0	1	07/03/13 10:00	07/08/13 15:07	7439-89-6	
2540D Total Suspended Solids									
Analytical Method: SM 2540D									
Total Suspended Solids	17.0	mg/L	5.0	5.0	1		07/03/13 10:09		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148288

QC Batch:	MPRP/23347	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET
Associated Lab Samples:	60148080010		

METHOD BLANK: 1215107 Matrix: Water

Associated Lab Samples: 60148080010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Iron	ug/L	ND	50.0	07/08/13 16:31	

LABORATORY CONTROL SAMPLE: 1215108

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	1000	927	93	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1215109 1215110

Parameter	Units	60148080002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Iron	ug/L	4990	1000	1000	5680	5690	69	70	70-130	0	20	M1

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148288

QC Batch: MPRP/23345

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60148080010

METHOD BLANK: 1215099

Matrix: Water

Associated Lab Samples: 60148080010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Iron, Dissolved	ug/L	ND	50.0	07/08/13 14:34	

LABORATORY CONTROL SAMPLE: 1215100

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron, Dissolved	ug/L	1000	929	93	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1215101 1215102

Parameter	Units	60148080002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Iron, Dissolved	ug/L	ND	1000	1000	913	897	91	89	70-130	2	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148288

QC Batch: WET/42184

Analysis Method: SM 2540D

QC Batch Method: SM 2540D

Analysis Description: 2540D Total Suspended Solids

Associated Lab Samples: 60148080010

METHOD BLANK: 1215055

Matrix: Water

Associated Lab Samples: 60148080010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	5.0	07/03/13 10:07	

SAMPLE DUPLICATE: 1215056

Parameter	Units	60147736001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	370	442	18	25	

SAMPLE DUPLICATE: 1215057

Parameter	Units	60147961001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	91.0	100	9	25	

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148288

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148288

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60148080010	DR3A1306271615	EPA 200.8	MPRP/23347	EPA 200.8	ICPM/2369
60148080010	DR3A1306271615	EPA 200.8	MPRP/23345	EPA 200.8	ICPM/2368
60148080010	DR3A1306271615	SM 2540D	WET/42184		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt
ESI Tech Spec Client

WO#: 60148080

60148080

Client Name: BP AMEC

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 1Z 733 W87 22 1006 0925 Pace Shipping Label Used? Yes ☒ No ☐

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other 2x2x12

Thermometer Used: T-112 / T-194

Type of Ice: Not Blue None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 0.6/2.2

Date and initials of person examining contents: pv 7/2/13

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6. TSS
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.
Unpreserved 5035A soils frozen w/in 48hrs? <u>pv 7/2/13</u>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Includes date/time/ID/analyses Matrix: <u>WT</u>		15.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	16.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	17.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		18.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	19.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	20. List State:

Client Notification/ Resolution:

Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: Lynda Lombardi Date/Time: 7/2/13

Comments/ Resolution: Email - Should samples be separated per COCs? Amw 7/2/13

Project Manager Review: Amw

Date: 7/2/13

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: 1105 Start:

End: 1110 End:

Temp: Temp:



Laboratory Management Program LaMP Chain of Custody Record

Page ³ ~~11~~ of ³ ~~11~~

BP/ARC Project Name: Rico-Argentine Mine Site

Req Due Date (mm/dd/yy): Rush TAT: Yes ☒ No ☐

BP/ARC Facility No:

Lab Work Order Number:

Lab Name: Pace Analytical Laboratories, Inc.				BP/ARC Facility Address: Rico-Argentine Mine				Consultant/Contractor: AMEC E&I, Inc.																									
Lab Address: 9608 Loiret Blvd., Lenexa, KS 66219				City, State, ZIP Code: Rico, Colorado 81332				Consultant/Contractor Project No: SA11161316																									
Lab PM: Heather Wilson				Lead Regulatory Agency: U.S. EPA Region 8				Address: 10670 White Rock Road, Suite 100, Rancho Cordova, CA																									
Lab Phone: (913) 563-1407				California Global ID No.: NA				Consultant/Contractor PM: Marc Lombardi																									
Lab Shipping Acct: UPS # 733W87				Enfos Proposal No: D00LL-0010 (WR 266494)				Phone: 916-636-3200																									
Lab Bottle Order No: NA				Accounting Mode: Provision <input checked="" type="checkbox"/> OOC-BU <input type="checkbox"/> OOC-RM <input type="checkbox"/>				Email Report/EDD To: lynda.lombardi@amec.com																									
Other Info: IX-Bench Scale Test <i>6/27/13 GUNDEL ROOM BENCH SCALE</i>				Stage: 4-Execute Activity: Spend				Invoice To: BP/ARC <input checked="" type="checkbox"/> Contractor <input type="checkbox"/>																									
BP/ARC EBM: Anthony Brown				Matrix				Requested Analyses				Report Type & QC Level																					
EBM Phone: 714-228-6770				No. Containers / Preservative								Standard <input checked="" type="checkbox"/>																					
EBM Email: anthony.brown@bp.com												Full Data Package <input type="checkbox"/>																					
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Tot Metals-see list (E200.8)	Dis Metals-see list (E200.8)	MSMSD	HOLD	Comments																	
	DR3A1306271615	6/27/13	1615	X			3	1	0	2	0	1803F	X	X	X	10TH4 183N	Dissolved metals are field filtered.																
<div>VAL 7/11/13</div>																																	
																	Metals As, Cd, Cu, Fe, Pb, Mn, Zn																
																	RUSH 5-Day TAT																
Sampler's Name: <i>ADRY CANTOR</i>				Relinquished By / Affiliation: <i>AMEC</i>				Date: <i>6/28/13</i>	Time: <i>1500</i>	Accepted By / Affiliation: <i>AMEC</i>				Date: <i>6/28/13</i>	Time: <i>1500</i>																		
Sampler's Company: <i>AMEC</i>				Ship Date: <i>7/1/13</i>				Ship Date: <i>7/1/13</i>				Ship Date: <i>7/1/13</i>				Ship Date: <i>7/1/13</i>																	
Shipment Method: <i>UPS</i>				Shipment Tracking No: <i>1Z753W8724000012933W512400000023</i>				Shipment Tracking No: <i>1Z753W8724000012933W512400000023</i>				Shipment Tracking No: <i>1Z753W8724000012933W512400000023</i>				Shipment Tracking No: <i>1Z753W8724000012933W512400000023</i>																	
Special Instructions:																																	
THIS LINE - LAB USE ONLY: Custody Seals In Place: <input checked="" type="checkbox"/> No <input type="checkbox"/> Temp Blank: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Cooler Temp on Receipt: <i>0.6/2.2°F/C</i> Trip Blank: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> MS/MSD Sample Submitted: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																																	

July 16, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: Rico-Argentine Mine Site
Pace Project No.: 60148379

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on July 09, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Mary Jane Walls for
Heather Wilson
heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148379

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Rico-Argentine Mine Site

Pace Project No.: 60148379

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60148379001	DR3A1307030400	Water	07/03/13 04:00	07/09/13 10:20
60148379002	DR3A1307040400	Water	07/04/13 04:00	07/09/13 10:20
60148379003	DR3A1307050400	Water	07/05/13 04:00	07/09/13 10:20

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SAMPLE ANALYTE COUNT

Project: Rico-Argentine Mine Site

Pace Project No.: 60148379

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60148379001	DR3A1307030400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60148379002	DR3A1307040400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60148379003	DR3A1307050400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148379

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: July 16, 2013

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148379

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: July 16, 2013

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23402

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60148284001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1217168)
 - Calcium, Dissolved
- MSD (Lab ID: 1217169)
 - Calcium, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148379

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: July 16, 2013

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23404

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60148379001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1217176)
 - Manganese
- MSD (Lab ID: 1217177)
 - Manganese

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60148379

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: July 16, 2013

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23403

B: Analyte was detected in the associated method blank.

- BLANK for HBN 298031 [MPRP/234 (Lab ID: 1217170)]
 - Chromium, Dissolved
 - Lead, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23403

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60148379001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1217172)
 - Manganese, Dissolved
- MSD (Lab ID: 1217173)
 - Manganese, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148379

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: July 16, 2013

General Information:

3 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148379

Method: EPA 245.1

Description: 245.1 Mercury, Dissolved

Client: BP AMEC

Date: July 16, 2013

General Information:

3 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148379

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: July 16, 2013

General Information:

3 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148379

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: July 16, 2013

General Information:

3 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148379

Sample: DR3A1307030400 Lab ID: 60148379001 Collected: 07/03/13 04:00 Received: 07/09/13 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	384	ug/L	75.0	16.6	1	07/09/13 16:30	07/15/13 10:14	7429-90-5	
Calcium	235000	ug/L	100	10.4	1	07/09/13 16:30	07/15/13 10:14	7440-70-2	
Iron	4690	ug/L	50.0	11.6	1	07/09/13 16:30	07/15/13 10:14	7439-89-6	
Lithium	23.3	ug/L	10.0	2.4	1	07/09/13 16:30	07/15/13 10:14	7439-93-2	
Magnesium	19100	ug/L	50.0	6.5	1	07/09/13 16:30	07/15/13 10:14	7439-95-4	
Potassium	4640	ug/L	500	44.4	1	07/09/13 16:30	07/15/13 10:14	7440-09-7	
Silicon	7840	ug/L	500	23.9	1	07/09/13 16:30	07/15/13 10:14	7440-21-3	
Sodium	28200	ug/L	500	21.7	1	07/09/13 16:30	07/15/13 10:14	7440-23-5	
Zinc	3710	ug/L	50.0	3.3	1	07/09/13 16:30	07/15/13 10:14	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	43.1J	ug/L	75.0	16.6	1	07/09/13 16:30	07/10/13 13:31	7429-90-5	
Calcium, Dissolved	225000	ug/L	100	10.4	1	07/09/13 16:30	07/10/13 15:21	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	11.6	1	07/09/13 16:30	07/10/13 13:31	7439-89-6	
Lithium, Dissolved	26.9	ug/L	10.0	2.4	1	07/09/13 16:30	07/10/13 13:31	7439-93-2	D9
Magnesium, Dissolved	18800	ug/L	50.0	6.5	1	07/09/13 16:30	07/10/13 13:31	7439-95-4	
Potassium, Dissolved	5070	ug/L	500	44.4	1	07/09/13 16:30	07/10/13 13:31	7440-09-7	D9
Silicon, Dissolved	6750	ug/L	500	23.9	1	07/09/13 16:30	07/10/13 13:31	7440-21-3	
Sodium, Dissolved	30400	ug/L	500	21.7	1	07/09/13 16:30	07/10/13 13:31	7440-23-5	D9
Zinc, Dissolved	3400	ug/L	50.0	3.3	1	07/09/13 16:30	07/10/13 13:31	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.54J	ug/L	1.0	0.050	1	07/09/13 16:30	07/11/13 12:47	7440-38-2	
Cadmium	19.5	ug/L	0.50	0.050	1	07/09/13 16:30	07/11/13 12:47	7440-43-9	
Chromium	0.48J	ug/L	1.0	0.070	1	07/09/13 16:30	07/11/13 12:47	7440-47-3	
Cobalt	2.4	ug/L	1.0	0.080	1	07/09/13 16:30	07/11/13 12:47	7440-48-4	
Copper	83.0	ug/L	1.0	0.12	1	07/09/13 16:30	07/11/13 12:47	7440-50-8	
Lead	5.2	ug/L	1.0	0.030	1	07/09/13 16:30	07/11/13 12:47	7439-92-1	
Manganese	1760	ug/L	1.0	0.14	1	07/09/13 16:30	07/11/13 12:47	7439-96-5	M1
Nickel	4.2	ug/L	1.0	0.070	1	07/09/13 16:30	07/11/13 12:47	7440-02-0	
Selenium	ND	ug/L	1.0	0.14	1	07/09/13 16:30	07/11/13 12:47	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.10J	ug/L	1.0	0.050	1	07/09/13 16:30	07/11/13 11:37	7440-38-2	
Cadmium, Dissolved	18.2	ug/L	0.50	0.050	1	07/09/13 16:30	07/11/13 11:37	7440-43-9	
Chromium, Dissolved	0.52J	ug/L	1.0	0.070	1	07/09/13 16:30	07/11/13 11:37	7440-47-3	B
Cobalt, Dissolved	3.6	ug/L	1.0	0.080	1	07/09/13 16:30	07/11/13 11:37	7440-48-4	D9
Copper, Dissolved	6.4	ug/L	1.0	0.12	1	07/09/13 16:30	07/11/13 11:37	7440-50-8	
Lead, Dissolved	0.28J	ug/L	1.0	0.030	1	07/09/13 16:30	07/11/13 11:37	7439-92-1	B
Manganese, Dissolved	1780	ug/L	1.0	0.14	1	07/09/13 16:30	07/11/13 11:37	7439-96-5	D9,M1
Nickel, Dissolved	4.3	ug/L	1.0	0.070	1	07/09/13 16:30	07/11/13 11:37	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	07/09/13 16:30	07/11/13 11:37	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/10/13 08:45	07/10/13 12:44	7439-97-6	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148379

Sample: DR3A1307030400 Lab ID: 60148379001 Collected: 07/03/13 04:00 Received: 07/09/13 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/10/13 08:45	07/10/13 12:13	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	97.0	mg/L	20.0	1.2	1		07/12/13 08:53		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/12/13 08:53		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/12/13 08:53		
Alkalinity, Total as CaCO ₃	97.0	mg/L	20.0	1.2	1		07/12/13 08:53		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	0.61J	mg/L	1.0	0.090	1		07/15/13 09:38	24959-67-9	
Chloride	0.89J	mg/L	1.0	0.50	1		07/15/13 09:38	16887-00-6	
Fluoride	2.3	mg/L	0.20	0.047	1		07/15/13 09:38	16984-48-8	
Sulfate	647	mg/L	50.0	8.0	50		07/12/13 14:19	14808-79-8	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site
Pace Project No.: 60148379

Sample: DR3A1307040400 Lab ID: 60148379002 Collected: 07/04/13 04:00 Received: 07/09/13 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	366	ug/L	75.0	16.6	1	07/09/13 16:30	07/15/13 10:17	7429-90-5	
Calcium	228000	ug/L	100	10.4	1	07/09/13 16:30	07/15/13 10:17	7440-70-2	
Iron	4560	ug/L	50.0	11.6	1	07/09/13 16:30	07/15/13 10:17	7439-89-6	
Lithium	23.8	ug/L	10.0	2.4	1	07/09/13 16:30	07/15/13 10:17	7439-93-2	
Magnesium	18300	ug/L	50.0	6.5	1	07/09/13 16:30	07/15/13 10:17	7439-95-4	
Potassium	4960	ug/L	500	44.4	1	07/09/13 16:30	07/15/13 10:17	7440-09-7	
Silicon	7540	ug/L	500	23.9	1	07/09/13 16:30	07/15/13 10:17	7440-21-3	
Sodium	31400	ug/L	500	21.7	1	07/09/13 16:30	07/15/13 10:17	7440-23-5	
Zinc	3540	ug/L	50.0	3.3	1	07/09/13 16:30	07/15/13 10:17	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	49.8J	ug/L	75.0	16.6	1	07/09/13 16:30	07/10/13 13:34	7429-90-5	
Calcium, Dissolved	224000	ug/L	100	10.4	1	07/09/13 16:30	07/10/13 15:24	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	11.6	1	07/09/13 16:30	07/10/13 13:34	7439-89-6	
Lithium, Dissolved	26.1	ug/L	10.0	2.4	1	07/09/13 16:30	07/10/13 13:34	7439-93-2	D9
Magnesium, Dissolved	18300	ug/L	50.0	6.5	1	07/09/13 16:30	07/10/13 13:34	7439-95-4	
Potassium, Dissolved	5400	ug/L	500	44.4	1	07/09/13 16:30	07/10/13 13:34	7440-09-7	D9
Silicon, Dissolved	6560	ug/L	500	23.9	1	07/09/13 16:30	07/10/13 13:34	7440-21-3	
Sodium, Dissolved	34000	ug/L	500	21.7	1	07/09/13 16:30	07/10/13 13:34	7440-23-5	D9
Zinc, Dissolved	3140	ug/L	50.0	3.3	1	07/09/13 16:30	07/10/13 13:34	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.54J	ug/L	1.0	0.050	1	07/09/13 16:30	07/11/13 13:04	7440-38-2	
Cadmium	18.6	ug/L	0.50	0.050	1	07/09/13 16:30	07/11/13 13:04	7440-43-9	
Chromium	0.29J	ug/L	1.0	0.070	1	07/09/13 16:30	07/11/13 13:04	7440-47-3	
Cobalt	2.3	ug/L	1.0	0.080	1	07/09/13 16:30	07/11/13 13:04	7440-48-4	
Copper	78.6	ug/L	1.0	0.12	1	07/09/13 16:30	07/11/13 13:04	7440-50-8	
Lead	5.1	ug/L	1.0	0.030	1	07/09/13 16:30	07/11/13 13:04	7439-92-1	
Manganese	1700	ug/L	1.0	0.14	1	07/09/13 16:30	07/11/13 13:04	7439-96-5	
Nickel	3.9	ug/L	1.0	0.070	1	07/09/13 16:30	07/11/13 13:04	7440-02-0	
Selenium	ND	ug/L	1.0	0.14	1	07/09/13 16:30	07/11/13 13:04	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.082J	ug/L	1.0	0.050	1	07/09/13 16:30	07/11/13 11:45	7440-38-2	
Cadmium, Dissolved	16.8	ug/L	0.50	0.050	1	07/09/13 16:30	07/11/13 11:45	7440-43-9	
Chromium, Dissolved	ND	ug/L	1.0	0.070	1	07/09/13 16:30	07/11/13 11:45	7440-47-3	
Cobalt, Dissolved	4.2	ug/L	1.0	0.080	1	07/09/13 16:30	07/11/13 11:45	7440-48-4	D9
Copper, Dissolved	4.3	ug/L	1.0	0.12	1	07/09/13 16:30	07/11/13 11:45	7440-50-8	
Lead, Dissolved	0.23J	ug/L	1.0	0.030	1	07/09/13 16:30	07/11/13 11:45	7439-92-1	B
Manganese, Dissolved	1760	ug/L	1.0	0.14	1	07/09/13 16:30	07/11/13 11:45	7439-96-5	D9
Nickel, Dissolved	4.0	ug/L	1.0	0.070	1	07/09/13 16:30	07/11/13 11:45	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	07/09/13 16:30	07/11/13 11:45	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/10/13 08:45	07/10/13 12:46	7439-97-6	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148379

Sample: DR3A1307040400		Lab ID: 60148379002		Collected: 07/04/13 04:00		Received: 07/09/13 10:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/10/13 08:45	07/10/13 12:15	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	94.9	mg/L	20.0	1.2	1		07/12/13 08:57		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/12/13 08:57		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/12/13 08:57		
Alkalinity, Total as CaCO ₃	94.9	mg/L	20.0	1.2	1		07/12/13 08:57		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.53J	mg/L	1.0	0.090	1		07/15/13 10:27	24959-67-9	
Chloride	0.90J	mg/L	1.0	0.50	1		07/15/13 10:27	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.047	1		07/15/13 10:27	16984-48-8	
Sulfate	645	mg/L	50.0	8.0	50		07/12/13 16:05	14808-79-8	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148379

Sample: DR3A1307050400		Lab ID: 60148379003		Collected: 07/05/13 04:00		Received: 07/09/13 10:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum	320	ug/L	75.0	16.6	1	07/09/13 16:30	07/15/13 10:29	7429-90-5	
Calcium	225000	ug/L	100	10.4	1	07/09/13 16:30	07/15/13 10:29	7440-70-2	
Iron	4280	ug/L	50.0	11.6	1	07/09/13 16:30	07/15/13 10:29	7439-89-6	
Lithium	23.5	ug/L	10.0	2.4	1	07/09/13 16:30	07/15/13 10:29	7439-93-2	
Magnesium	18600	ug/L	50.0	6.5	1	07/09/13 16:30	07/15/13 10:29	7439-95-4	
Potassium	4910	ug/L	500	44.4	1	07/09/13 16:30	07/15/13 10:29	7440-09-7	
Silicon	7470	ug/L	500	23.9	1	07/09/13 16:30	07/15/13 10:29	7440-21-3	
Sodium	33400	ug/L	500	21.7	1	07/09/13 16:30	07/15/13 10:29	7440-23-5	
Zinc	3510	ug/L	50.0	3.3	1	07/09/13 16:30	07/15/13 10:29	7440-66-6	
200.7 Metals, Dissolved		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	65.1J	ug/L	75.0	16.6	1	07/09/13 16:30	07/10/13 13:37	7429-90-5	
Calcium, Dissolved	222000	ug/L	100	10.4	1	07/09/13 16:30	07/10/13 15:27	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	11.6	1	07/09/13 16:30	07/10/13 13:37	7439-89-6	
Lithium, Dissolved	26.4	ug/L	10.0	2.4	1	07/09/13 16:30	07/10/13 13:37	7439-93-2	D9
Magnesium, Dissolved	18500	ug/L	50.0	6.5	1	07/09/13 16:30	07/10/13 13:37	7439-95-4	
Potassium, Dissolved	5320	ug/L	500	44.4	1	07/09/13 16:30	07/10/13 13:37	7440-09-7	D9
Silicon, Dissolved	6550	ug/L	500	23.9	1	07/09/13 16:30	07/10/13 13:37	7440-21-3	
Sodium, Dissolved	36200	ug/L	500	21.7	1	07/09/13 16:30	07/10/13 13:37	7440-23-5	D9
Zinc, Dissolved	3250	ug/L	50.0	3.3	1	07/09/13 16:30	07/10/13 13:37	7440-66-6	
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Arsenic	0.44J	ug/L	1.0	0.050	1	07/09/13 16:30	07/11/13 13:08	7440-38-2	
Cadmium	18.2	ug/L	0.50	0.050	1	07/09/13 16:30	07/11/13 13:08	7440-43-9	
Chromium	0.62J	ug/L	1.0	0.070	1	07/09/13 16:30	07/11/13 13:08	7440-47-3	
Cobalt	2.3	ug/L	1.0	0.080	1	07/09/13 16:30	07/11/13 13:08	7440-48-4	
Copper	75.0	ug/L	1.0	0.12	1	07/09/13 16:30	07/11/13 13:08	7440-50-8	
Lead	4.5	ug/L	1.0	0.030	1	07/09/13 16:30	07/11/13 13:08	7439-92-1	
Manganese	1680	ug/L	1.0	0.14	1	07/09/13 16:30	07/11/13 13:08	7439-96-5	
Nickel	3.9	ug/L	1.0	0.070	1	07/09/13 16:30	07/11/13 13:08	7440-02-0	
Selenium	ND	ug/L	1.0	0.14	1	07/09/13 16:30	07/11/13 13:08	7782-49-2	
200.8 MET ICPMS, Dissolved		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Arsenic, Dissolved	0.061J	ug/L	1.0	0.050	1	07/09/13 16:30	07/11/13 11:49	7440-38-2	
Cadmium, Dissolved	17.4	ug/L	0.50	0.050	1	07/09/13 16:30	07/11/13 11:49	7440-43-9	
Chromium, Dissolved	0.10J	ug/L	1.0	0.070	1	07/09/13 16:30	07/11/13 11:49	7440-47-3	B
Cobalt, Dissolved	4.0	ug/L	1.0	0.080	1	07/09/13 16:30	07/11/13 11:49	7440-48-4	D9
Copper, Dissolved	5.4	ug/L	1.0	0.12	1	07/09/13 16:30	07/11/13 11:49	7440-50-8	
Lead, Dissolved	0.25J	ug/L	1.0	0.030	1	07/09/13 16:30	07/11/13 11:49	7439-92-1	B
Manganese, Dissolved	1750	ug/L	1.0	0.14	1	07/09/13 16:30	07/11/13 11:49	7439-96-5	D9
Nickel, Dissolved	4.1	ug/L	1.0	0.070	1	07/09/13 16:30	07/11/13 11:49	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	07/09/13 16:30	07/11/13 11:49	7782-49-2	
245.1 Mercury		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	ND	ug/L	0.20	0.14	1	07/10/13 08:45	07/10/13 12:48	7439-97-6	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148379

Sample: DR3A1307050400 Lab ID: 60148379003 Collected: 07/05/13 04:00 Received: 07/09/13 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/10/13 08:45	07/10/13 12:17	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	106	mg/L	20.0	1.2	1		07/12/13 09:02		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/12/13 09:02		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/12/13 09:02		
Alkalinity, Total as CaCO ₃	106	mg/L	20.0	1.2	1		07/12/13 09:02		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	0.62J	mg/L	1.0	0.090	1		07/15/13 11:16	24959-67-9	
Chloride	0.88J	mg/L	1.0	0.50	1		07/15/13 11:16	16887-00-6	
Fluoride	2.1	mg/L	0.20	0.047	1		07/15/13 11:16	16984-48-8	
Sulfate	644	mg/L	50.0	8.0	50		07/12/13 16:41	14808-79-8	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148379

QC Batch: MERP/7489 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60148379001, 60148379002, 60148379003

METHOD BLANK: 1217301 Matrix: Water

Associated Lab Samples: 60148379001, 60148379002, 60148379003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	07/10/13 12:37	

LABORATORY CONTROL SAMPLE: 1217302

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.2	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1217303 1217304

Parameter	Units	60148381002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	5.0	5.2	100	104	70-130	4	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148379

QC Batch: MERP/7488 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury - Dissolved
Associated Lab Samples: 60148379001, 60148379002, 60148379003

METHOD BLANK: 1217296 Matrix: Water

Associated Lab Samples: 60148379001, 60148379002, 60148379003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	07/10/13 11:57	

LABORATORY CONTROL SAMPLE: 1217297

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	4.9	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1217298 1217299

Parameter	Units	60148381002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury, Dissolved	ug/L	ND	5	5	5.5	5.0	111	100	70-130	10	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148379

QC Batch: MPRP/23406 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60148379001, 60148379002, 60148379003

METHOD BLANK: 1217182 Matrix: Water

Associated Lab Samples: 60148379001, 60148379002, 60148379003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	07/15/13 10:08	
Calcium	ug/L	ND	100	07/15/13 10:08	
Iron	ug/L	ND	50.0	07/15/13 10:08	
Lithium	ug/L	ND	10.0	07/15/13 10:08	
Magnesium	ug/L	ND	50.0	07/15/13 10:08	
Potassium	ug/L	ND	500	07/15/13 10:08	
Silicon	ug/L	ND	500	07/15/13 10:08	
Sodium	ug/L	ND	500	07/15/13 10:08	
Zinc	ug/L	ND	50.0	07/15/13 10:08	

LABORATORY CONTROL SAMPLE: 1217183

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	9950	100	85-115	
Calcium	ug/L	10000	9970	100	85-115	
Iron	ug/L	10000	10100	101	85-115	
Lithium	ug/L	1000	975	98	85-115	
Magnesium	ug/L	10000	10000	100	85-115	
Potassium	ug/L	10000	9870	99	85-115	
Silicon	ug/L	5000	5010	100	85-115	
Sodium	ug/L	10000	9880	99	85-115	
Zinc	ug/L	1000	996	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1217184 1217185

Parameter	Units	60148379002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	366	10000	10000	10300	10300	100	99	70-130	0	8	
Calcium	ug/L	228000	10000	10000	235000	240000	75	126	70-130	2	9	
Iron	ug/L	4560	10000	10000	14300	14400	98	99	70-130	0	10	
Lithium	ug/L	23.8	1000	1000	1030	1030	101	100	70-130	1	20	
Magnesium	ug/L	18300	10000	10000	27900	28300	96	100	70-130	1	9	
Potassium	ug/L	4960	10000	10000	15200	15200	102	103	70-130	0	7	
Silicon	ug/L	7540	5000	5000	12600	12700	100	102	70-130	1	5	
Sodium	ug/L	31400	10000	10000	41800	42000	104	106	70-130	0	8	
Zinc	ug/L	3540	1000	1000	4480	4520	94	98	70-130	1	11	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148379

QC Batch: MPRP/23402

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60148379001, 60148379002, 60148379003

METHOD BLANK: 1217166

Matrix: Water

Associated Lab Samples: 60148379001, 60148379002, 60148379003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	07/10/13 13:24	
Calcium, Dissolved	ug/L	ND	100	07/10/13 15:15	
Iron, Dissolved	ug/L	ND	50.0	07/10/13 13:24	
Lithium, Dissolved	ug/L	ND	10.0	07/10/13 13:24	
Magnesium, Dissolved	ug/L	ND	50.0	07/10/13 13:24	
Potassium, Dissolved	ug/L	ND	500	07/10/13 13:24	
Silicon, Dissolved	ug/L	ND	500	07/10/13 13:24	
Sodium, Dissolved	ug/L	51.5J	500	07/10/13 13:24	
Zinc, Dissolved	ug/L	ND	50.0	07/10/13 13:24	

LABORATORY CONTROL SAMPLE: 1217167

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	10300	103	85-115	
Calcium, Dissolved	ug/L	10000	9540	95	85-115	
Iron, Dissolved	ug/L	10000	9540	95	85-115	
Lithium, Dissolved	ug/L	1000	1030	103	85-115	
Magnesium, Dissolved	ug/L	10000	9950	99	85-115	
Potassium, Dissolved	ug/L	10000	10800	108	85-115	
Silicon, Dissolved	ug/L	5000	4670	93	85-115	
Sodium, Dissolved	ug/L	10000	10800	108	85-115	
Zinc, Dissolved	ug/L	1000	982	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1217168

1217169

Parameter	Units	60148284001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	56.2J	10000	10000	10200	10500	101	105	70-130	4	8	
Calcium, Dissolved	ug/L	230000	10000	10000	231000	234000	16	37	70-130	1	9 M1	
Iron, Dissolved	ug/L	22.2J	10000	10000	9160	9510	91	95	70-130	4	10	
Lithium, Dissolved	ug/L	27.5	1000	1000	1080	1100	105	107	70-130	2	20	
Magnesium, Dissolved	ug/L	19400	10000	10000	28400	29000	90	96	70-130	2	9	
Potassium, Dissolved	ug/L	5150	10000	10000	15700	16300	106	111	70-130	3	7	
Silicon, Dissolved	ug/L	6860	5000	5000	11200	11500	87	94	70-130	3	5	
Sodium, Dissolved	ug/L	30500	10000	10000	40200	41200	97	107	70-130	2	8	
Zinc, Dissolved	ug/L	3440	1000	1000	4290	4360	84	91	70-130	2	11	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148379

QC Batch: MPRP/23404 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60148379001, 60148379002, 60148379003

METHOD BLANK: 1217174 Matrix: Water

Associated Lab Samples: 60148379001, 60148379002, 60148379003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	07/11/13 12:35	
Cadmium	ug/L	ND	0.50	07/11/13 12:35	
Chromium	ug/L	ND	1.0	07/11/13 12:35	
Cobalt	ug/L	ND	1.0	07/11/13 12:35	
Copper	ug/L	ND	1.0	07/11/13 12:35	
Lead	ug/L	0.22J	1.0	07/11/13 12:35	
Manganese	ug/L	ND	1.0	07/11/13 12:35	
Nickel	ug/L	ND	1.0	07/11/13 12:35	
Selenium	ug/L	ND	1.0	07/11/13 12:35	

LABORATORY CONTROL SAMPLE: 1217175

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	39.9	100	85-115	
Cadmium	ug/L	40	40.5	101	85-115	
Chromium	ug/L	40	40.4	101	85-115	
Cobalt	ug/L	40	39.9	100	85-115	
Copper	ug/L	40	40.2	100	85-115	
Lead	ug/L	40	39.8	100	85-115	
Manganese	ug/L	40	40.4	101	85-115	
Nickel	ug/L	40	39.4	99	85-115	
Selenium	ug/L	40	40.2	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1217176 1217177

Parameter	Units	60148379001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	0.54J	40	40	40.9	41.2	101	102	70-130	1	20	
Cadmium	ug/L	19.5	40	40	58.9	59.1	98	99	70-130	0	20	
Chromium	ug/L	0.48J	40	40	39.2	39.2	97	97	70-130	0	20	
Cobalt	ug/L	2.4	40	40	40.5	40.5	95	95	70-130	0	20	
Copper	ug/L	83.0	40	40	119	121	89	94	70-130	2	20	
Lead	ug/L	5.2	40	40	44.4	44.6	98	98	70-130	0	20	
Manganese	ug/L	1760	40	40	1770	1810	38	132	70-130	2	20 M1	
Nickel	ug/L	4.2	40	40	41.3	41.8	93	94	70-130	1	20	
Selenium	ug/L	ND	40	40	40.2	40.8	100	102	70-130	1	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148379

QC Batch: MPRP/23403 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60148379001, 60148379002, 60148379003

METHOD BLANK: 1217170 Matrix: Water

Associated Lab Samples: 60148379001, 60148379002, 60148379003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	07/11/13 11:16	
Cadmium, Dissolved	ug/L	ND	0.50	07/11/13 11:16	
Chromium, Dissolved	ug/L	0.15J	1.0	07/11/13 11:16	
Cobalt, Dissolved	ug/L	ND	1.0	07/11/13 11:16	
Copper, Dissolved	ug/L	0.20J	1.0	07/11/13 11:16	
Lead, Dissolved	ug/L	0.22J	1.0	07/11/13 11:16	
Manganese, Dissolved	ug/L	ND	1.0	07/11/13 11:16	
Nickel, Dissolved	ug/L	ND	1.0	07/11/13 11:16	
Selenium, Dissolved	ug/L	ND	1.0	07/11/13 11:16	

LABORATORY CONTROL SAMPLE: 1217171

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	39.5	99	85-115	
Cadmium, Dissolved	ug/L	40	40.0	100	85-115	
Chromium, Dissolved	ug/L	40	40.9	102	85-115	
Cobalt, Dissolved	ug/L	40	39.9	100	85-115	
Copper, Dissolved	ug/L	40	40.6	102	85-115	
Lead, Dissolved	ug/L	40	39.1	98	85-115	
Manganese, Dissolved	ug/L	40	40.2	100	85-115	
Nickel, Dissolved	ug/L	40	40.2	101	85-115	
Selenium, Dissolved	ug/L	40	39.3	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1217172 1217173

Parameter	Units	60148379001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	0.10J	40	40	41.5	41.1	104	103	70-130	1	20	
Cadmium, Dissolved	ug/L	18.2	40	40	58.3	58.0	100	100	70-130	1	20	
Chromium, Dissolved	ug/L	0.52J	40	40	39.9	39.7	98	98	70-130	0	20	
Cobalt, Dissolved	ug/L	3.6	40	40	42.3	42.3	97	97	70-130	0	20	
Copper, Dissolved	ug/L	6.4	40	40	44.1	43.8	94	93	70-130	1	20	
Lead, Dissolved	ug/L	0.28J	40	40	39.6	39.3	98	98	70-130	1	20	
Manganese, Dissolved	ug/L	1780	40	40	1850	1870	168	208	70-130	1	20 M1	
Nickel, Dissolved	ug/L	4.3	40	40	42.6	42.1	96	95	70-130	1	20	
Selenium, Dissolved	ug/L	ND	40	40	41.6	40.5	104	101	70-130	3	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148379

QC Batch: WET/42308

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60148379001, 60148379002, 60148379003

METHOD BLANK: 1218645

Matrix: Water

Associated Lab Samples: 60148379001, 60148379002, 60148379003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	07/12/13 08:33	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	07/12/13 08:33	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	07/12/13 08:33	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	07/12/13 08:33	

LABORATORY CONTROL SAMPLE: 1218646

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	506	101	90-110	

SAMPLE DUPLICATE: 1218649

Parameter	Units	60148348001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	526	526	0	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	526	526	0	10	

SAMPLE DUPLICATE: 1218650

Parameter	Units	60148416001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	381	384	1	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	381	384	1	10	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148379

QC Batch: WETA/25434 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60148379001, 60148379002, 60148379003

METHOD BLANK: 1218953 Matrix: Water

Associated Lab Samples: 60148379001, 60148379002, 60148379003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.0	07/15/13 09:05	

METHOD BLANK: 1220497 Matrix: Water

Associated Lab Samples: 60148379001, 60148379002, 60148379003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	07/15/13 09:05	
Chloride	mg/L	ND	1.0	07/15/13 09:05	
Fluoride	mg/L	ND	0.20	07/15/13 09:05	

LABORATORY CONTROL SAMPLE: 1218954

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	4.8	95	90-110	

LABORATORY CONTROL SAMPLE: 1220498

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.7	93	90-110	
Chloride	mg/L	5	4.7	94	90-110	
Fluoride	mg/L	2.5	2.3	92	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1218955 1218956

Parameter	Units	60148379001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Bromide	mg/L	0.61J	5	5	5.3	5.3	93	94	75-119	1	10
Chloride	mg/L	0.89J	5	5	5.4	5.4	90	90	64-118	0	12
Fluoride	mg/L	2.3	2.5	2.5	4.7	4.7	98	98	75-110	0	10
Sulfate	mg/L	647	250	250	881	892	94	98	61-119	1	10

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QUALIFIERS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148379

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148379

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60148379001	DR3A1307030400	EPA 200.7	MPRP/23406	EPA 200.7	ICP/18413
60148379002	DR3A1307040400	EPA 200.7	MPRP/23406	EPA 200.7	ICP/18413
60148379003	DR3A1307050400	EPA 200.7	MPRP/23406	EPA 200.7	ICP/18413
60148379001	DR3A1307030400	EPA 200.7	MPRP/23402	EPA 200.7	ICP/18414
60148379002	DR3A1307040400	EPA 200.7	MPRP/23402	EPA 200.7	ICP/18414
60148379003	DR3A1307050400	EPA 200.7	MPRP/23402	EPA 200.7	ICP/18414
60148379001	DR3A1307030400	EPA 200.8	MPRP/23404	EPA 200.8	ICPM/2375
60148379002	DR3A1307040400	EPA 200.8	MPRP/23404	EPA 200.8	ICPM/2375
60148379003	DR3A1307050400	EPA 200.8	MPRP/23404	EPA 200.8	ICPM/2375
60148379001	DR3A1307030400	EPA 200.8	MPRP/23403	EPA 200.8	ICPM/2376
60148379002	DR3A1307040400	EPA 200.8	MPRP/23403	EPA 200.8	ICPM/2376
60148379003	DR3A1307050400	EPA 200.8	MPRP/23403	EPA 200.8	ICPM/2376
60148379001	DR3A1307030400	EPA 245.1	MERP/7489	EPA 245.1	MERC/7446
60148379002	DR3A1307040400	EPA 245.1	MERP/7489	EPA 245.1	MERC/7446
60148379003	DR3A1307050400	EPA 245.1	MERP/7489	EPA 245.1	MERC/7446
60148379001	DR3A1307030400	EPA 245.1	MERP/7488	EPA 245.1	MERC/7445
60148379002	DR3A1307040400	EPA 245.1	MERP/7488	EPA 245.1	MERC/7445
60148379003	DR3A1307050400	EPA 245.1	MERP/7488	EPA 245.1	MERC/7445
60148379001	DR3A1307030400	SM 2320B	WET/42308		
60148379002	DR3A1307040400	SM 2320B	WET/42308		
60148379003	DR3A1307050400	SM 2320B	WET/42308		
60148379001	DR3A1307030400	EPA 300.0	WETA/25434		
60148379002	DR3A1307040400	EPA 300.0	WETA/25434		
60148379003	DR3A1307050400	EPA 300.0	WETA/25434		

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Sample Condition Upon Receipt
ESI Tech Spec Client

WO#: 60148379



60148379

Client Name:

BP AmEC
BP Rito Amw 7/9/13

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 12 733 W87 22 1006 0872 Pace Shipping Label Used? Yes ☐ No ☒

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☒ Other ☐

Thermometer Used: T-112 T-194

Type of Ice: Wet Blue None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 0.4

Date and initials of person examining contents: KC 7/9/13

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses	Matrix: WT	13.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	17. List State:

Client Notification/ Resolution:

Copy COC to Client? Y / ☒ N

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Amw

Date: 7/9/13

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: 10:55 Start:

End: 11:00 End:

Temp: 0.4 Temp:



Laboratory Management Program LaMP Chain of Custody Record

Page 1 of 1BP/ARC Project Name: Rico-Argentine Mine Site

Req Due Date (mm/dd/yy): _____

Rush TAT: Yes X No _____

BP/ARC Facility No: _____

Lab Work Order Number: _____

Lab Name: Pace Analytical Laboratories, Inc.				BP/ARC Facility Address: Rico-Argentine Mine				Consultant/Contractor: AMEC E&I, Inc.													
Lab Address: 9608 Loiret Blvd., Lenexa, KS 66219				City, State, ZIP Code: Rico, Colorado				Consultant/Contractor Project No: SA11161313.300H													
Lab PM: Heather Wilson				Lead Regulatory Agency: U.S. EPA Region 8				Address: 10670 White Rock Road, Suite 100, Rancho Cordova, CA													
Lab Phone: (913) 563-1407				California Global ID No.: NA				Consultant/Contractor PM: Marc Lombardi													
Lab Shipping Acct: UPS # 733W87				Enfos Proposal No: D00LL-0010 WR 266494				Phone: 916-636-3200													
Lab Bottle Order No: NA				Accounting Mode: Provision <u>X</u> OOC-BU _____ OOC-RM _____				Email Report/EDD To: lynda.lombardi@amec.com													
Other Info: 2013 517 Injection Treatability Study				Stage: 4-Execute Activity: Spend				Invoice To: BP/ARC <u>X</u> Contractor _____													
BP/ARC EBM: Anthony Brown				Matrix		No. Containers / Preservative		Requested Analyses						Report Type & QC Level							
EBM Phone: 714-228-6770														Standard <u>X</u>							
EBM Email: anthony.brown@bp.com														Full Data Package _____							
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Methanol	Tot Metals-see notes (E200.7/200.8/E245.1)	Dis Metals-see notes (E200.7/200.8/E245.1)	Alkalinity-Total HCO ₃ , CO ₃ , OH (SM2320B)	Bromide (E300.0)	Chloride (E300.0)	Fluoride (E300.0)	Sulfate (E300.0)	Comments	
001	DR3A1307030400	7/3/13	400		X		3	1		2	2(BP3N)		X	X	X	X	X	X	X	1(BP2U)	Dissolved metals samples are field filtered
002	DR3A1307040400	7/4/13	400		X		3	1		2			X	X	X	X	X	X	X		
003	DR3A1307050400	7/5/13	400		X		3	1		2			X	X	X	X	X	X	X		Metals are: Al, Ca, Fe, K, Li, Na, Mg, Si, Zn (E200.7); As, Cd, Co, Cr, Cu, Mn, Ni, Pb, Se (E200.8); and Hg (E245.1)
Handwritten signature and date 7/5/13																					
Sampler's Name: <u>ABBY PATZER</u>				Relinquished By / Affiliation: <u>ABBY PATZER / AMEC</u>				Date: <u>7/5/13</u>		Time: <u>14:15</u>		Accepted By / Affiliation: <u>High E / PASI</u>				Date: <u>7/9/13</u>		Time: <u>10:26</u>			
Sampler's Company: <u>AMEC</u>																					
Shipment Method: <u>UPS</u>				Ship Date: _____																	
Shipment Tracking No: <u>1Z733W872210060881</u>																					
Special Instructions: <u>UPS Tracking # 1Z733W872210060890</u>																					
THIS LINE - LAB USE ONLY: Custody Seals In Place: <u>Yes</u> / No				Temp Blank: <u>Yes</u> / No				Cooler Temp on Receipt: <u>0.4</u> °F/C				Trip Blank: Yes <u>NO</u>				MS/MSD Sample Submitted: Yes / No					

July 16, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: Rico-Argentine Mine Site
Pace Project No.: 60148381

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on July 09, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Mary Jane Walls for
Heather Wilson
heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148381

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Rico-Argentine Mine Site

Pace Project No.: 60148381

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60148381001	DR3A1307060400	Water	07/06/13 04:00	07/09/13 10:20
60148381002	DR3A1307070400	Water	07/07/13 04:00	07/09/13 10:20
60148381003	DR3A1307080400	Water	07/08/13 04:00	07/09/13 10:20

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SAMPLE ANALYTE COUNT

Project: Rico-Argentine Mine Site

Pace Project No.: 60148381

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60148381001	DR3A1307060400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60148381002	DR3A1307070400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60148381003	DR3A1307080400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148381

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: July 16, 2013

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148381

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: July 16, 2013

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23402

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60148284001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1217168)
 - Calcium, Dissolved
- MSD (Lab ID: 1217169)
 - Calcium, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148381

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: July 16, 2013

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23404

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60148379001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1217176)
 - Manganese
- MSD (Lab ID: 1217177)
 - Manganese

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60148381

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: July 16, 2013

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23403

B: Analyte was detected in the associated method blank.

- BLANK for HBN 298031 [MPRP/234 (Lab ID: 1217170)]
 - Chromium, Dissolved
 - Lead, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23403

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60148379001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1217172)
 - Manganese, Dissolved
- MSD (Lab ID: 1217173)
 - Manganese, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148381

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: July 16, 2013

General Information:

3 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148381

Method: EPA 245.1

Description: 245.1 Mercury, Dissolved

Client: BP AMEC

Date: July 16, 2013

General Information:

3 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148381

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: July 16, 2013

General Information:

3 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148381

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: July 16, 2013

General Information:

3 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148381

Sample: DR3A1307060400 Lab ID: 60148381001 Collected: 07/06/13 04:00 Received: 07/09/13 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	334	ug/L	75.0	16.6	1	07/09/13 16:30	07/15/13 10:32	7429-90-5	
Calcium	236000	ug/L	100	10.4	1	07/09/13 16:30	07/15/13 10:32	7440-70-2	
Iron	4370	ug/L	50.0	11.6	1	07/09/13 16:30	07/15/13 10:32	7439-89-6	
Lithium	25.2	ug/L	10.0	2.4	1	07/09/13 16:30	07/15/13 10:32	7439-93-2	
Magnesium	19300	ug/L	50.0	6.5	1	07/09/13 16:30	07/15/13 10:32	7439-95-4	
Potassium	4890	ug/L	500	44.4	1	07/09/13 16:30	07/15/13 10:32	7440-09-7	
Silicon	7750	ug/L	500	23.9	1	07/09/13 16:30	07/15/13 10:32	7440-21-3	
Sodium	34000	ug/L	500	21.7	1	07/09/13 16:30	07/15/13 10:32	7440-23-5	
Zinc	3560	ug/L	50.0	3.3	1	07/09/13 16:30	07/15/13 10:32	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	53.1J	ug/L	75.0	16.6	1	07/09/13 16:30	07/10/13 13:40	7429-90-5	
Calcium, Dissolved	222000	ug/L	100	10.4	1	07/09/13 16:30	07/10/13 15:30	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	11.6	1	07/09/13 16:30	07/10/13 13:40	7439-89-6	
Lithium, Dissolved	26.3	ug/L	10.0	2.4	1	07/09/13 16:30	07/10/13 13:40	7439-93-2	D9
Magnesium, Dissolved	18600	ug/L	50.0	6.5	1	07/09/13 16:30	07/10/13 13:40	7439-95-4	
Potassium, Dissolved	5090	ug/L	500	44.4	1	07/09/13 16:30	07/10/13 13:40	7440-09-7	D9
Silicon, Dissolved	6480	ug/L	500	23.9	1	07/09/13 16:30	07/10/13 13:40	7440-21-3	
Sodium, Dissolved	35700	ug/L	500	21.7	1	07/09/13 16:30	07/10/13 13:40	7440-23-5	D9
Zinc, Dissolved	2970	ug/L	50.0	3.3	1	07/09/13 16:30	07/10/13 13:40	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.46J	ug/L	1.0	0.050	1	07/09/13 16:30	07/11/13 13:12	7440-38-2	
Cadmium	18.6	ug/L	0.50	0.050	1	07/09/13 16:30	07/11/13 13:12	7440-43-9	
Chromium	0.38J	ug/L	1.0	0.070	1	07/09/13 16:30	07/11/13 13:12	7440-47-3	
Cobalt	2.3	ug/L	1.0	0.080	1	07/09/13 16:30	07/11/13 13:12	7440-48-4	
Copper	74.2	ug/L	1.0	0.12	1	07/09/13 16:30	07/11/13 13:12	7440-50-8	
Lead	4.5	ug/L	1.0	0.030	1	07/09/13 16:30	07/11/13 13:12	7439-92-1	
Manganese	1740	ug/L	1.0	0.14	1	07/09/13 16:30	07/11/13 13:12	7439-96-5	
Nickel	4.1	ug/L	1.0	0.070	1	07/09/13 16:30	07/11/13 13:12	7440-02-0	
Selenium	ND	ug/L	1.0	0.14	1	07/09/13 16:30	07/11/13 13:12	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	1.0	0.050	1	07/09/13 16:30	07/11/13 11:53	7440-38-2	
Cadmium, Dissolved	16.0	ug/L	0.50	0.050	1	07/09/13 16:30	07/11/13 11:53	7440-43-9	
Chromium, Dissolved	0.16J	ug/L	1.0	0.070	1	07/09/13 16:30	07/11/13 11:53	7440-47-3	B
Cobalt, Dissolved	3.4	ug/L	1.0	0.080	1	07/09/13 16:30	07/11/13 11:53	7440-48-4	D9
Copper, Dissolved	3.7	ug/L	1.0	0.12	1	07/09/13 16:30	07/11/13 11:53	7440-50-8	
Lead, Dissolved	0.25J	ug/L	1.0	0.030	1	07/09/13 16:30	07/11/13 11:53	7439-92-1	B
Manganese, Dissolved	1750	ug/L	1.0	0.14	1	07/09/13 16:30	07/11/13 11:53	7439-96-5	D9
Nickel, Dissolved	3.9	ug/L	1.0	0.070	1	07/09/13 16:30	07/11/13 11:53	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	07/09/13 16:30	07/11/13 11:53	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/10/13 08:45	07/10/13 12:51	7439-97-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148381

Sample: DR3A1307060400 Lab ID: 60148381001 Collected: 07/06/13 04:00 Received: 07/09/13 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/10/13 08:45	07/10/13 12:19	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	109	mg/L	20.0	1.2	1		07/12/13 09:06		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/12/13 09:06		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/12/13 09:06		
Alkalinity, Total as CaCO ₃	109	mg/L	20.0	1.2	1		07/12/13 09:06		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	0.60J	mg/L	1.0	0.090	1		07/15/13 11:33	24959-67-9	
Chloride	0.88J	mg/L	1.0	0.50	1		07/15/13 11:33	16887-00-6	
Fluoride	2.1	mg/L	0.20	0.047	1		07/15/13 11:33	16984-48-8	
Sulfate	651	mg/L	50.0	8.0	50		07/12/13 17:16	14808-79-8	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148381

Sample: DR3A1307070400 Lab ID: 60148381002 Collected: 07/07/13 04:00 Received: 07/09/13 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	327	ug/L	75.0	16.6	1	07/09/13 16:30	07/15/13 10:36	7429-90-5	
Calcium	225000	ug/L	100	10.4	1	07/09/13 16:30	07/15/13 10:36	7440-70-2	
Iron	4020	ug/L	50.0	11.6	1	07/09/13 16:30	07/15/13 10:36	7439-89-6	
Lithium	24.4	ug/L	10.0	2.4	1	07/09/13 16:30	07/15/13 10:36	7439-93-2	
Magnesium	18700	ug/L	50.0	6.5	1	07/09/13 16:30	07/15/13 10:36	7439-95-4	
Potassium	4550	ug/L	500	44.4	1	07/09/13 16:30	07/15/13 10:36	7440-09-7	
Silicon	7400	ug/L	500	23.9	1	07/09/13 16:30	07/15/13 10:36	7440-21-3	
Sodium	32800	ug/L	500	21.7	1	07/09/13 16:30	07/15/13 10:36	7440-23-5	
Zinc	3550	ug/L	50.0	3.3	1	07/09/13 16:30	07/15/13 10:36	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	57.8J	ug/L	75.0	16.6	1	07/09/13 16:30	07/10/13 13:43	7429-90-5	
Calcium, Dissolved	226000	ug/L	100	10.4	1	07/09/13 16:30	07/10/13 15:33	7440-70-2	D9
Iron, Dissolved	ND	ug/L	50.0	11.6	1	07/09/13 16:30	07/10/13 13:43	7439-89-6	
Lithium, Dissolved	25.4	ug/L	10.0	2.4	1	07/09/13 16:30	07/10/13 13:43	7439-93-2	D9
Magnesium, Dissolved	18800	ug/L	50.0	6.5	1	07/09/13 16:30	07/10/13 13:43	7439-95-4	D9
Potassium, Dissolved	4940	ug/L	500	44.4	1	07/09/13 16:30	07/10/13 13:43	7440-09-7	D9
Silicon, Dissolved	6540	ug/L	500	23.9	1	07/09/13 16:30	07/10/13 13:43	7440-21-3	
Sodium, Dissolved	35100	ug/L	500	21.7	1	07/09/13 16:30	07/10/13 13:43	7440-23-5	D9
Zinc, Dissolved	3190	ug/L	50.0	3.3	1	07/09/13 16:30	07/10/13 13:43	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.46J	ug/L	1.0	0.050	1	07/09/13 16:30	07/11/13 13:24	7440-38-2	
Cadmium	18.7	ug/L	0.50	0.050	1	07/09/13 16:30	07/11/13 13:24	7440-43-9	
Chromium	0.43J	ug/L	1.0	0.070	1	07/09/13 16:30	07/11/13 13:24	7440-47-3	
Cobalt	2.3	ug/L	1.0	0.080	1	07/09/13 16:30	07/11/13 13:24	7440-48-4	
Copper	73.0	ug/L	1.0	0.12	1	07/09/13 16:30	07/11/13 13:24	7440-50-8	
Lead	4.2	ug/L	1.0	0.030	1	07/09/13 16:30	07/11/13 13:24	7439-92-1	
Manganese	1740	ug/L	1.0	0.14	1	07/09/13 16:30	07/11/13 13:24	7439-96-5	
Nickel	4.2	ug/L	1.0	0.070	1	07/09/13 16:30	07/11/13 13:24	7440-02-0	
Selenium	ND	ug/L	1.0	0.14	1	07/09/13 16:30	07/11/13 13:24	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.061J	ug/L	1.0	0.050	1	07/09/13 16:30	07/11/13 12:06	7440-38-2	
Cadmium, Dissolved	16.9	ug/L	0.50	0.050	1	07/09/13 16:30	07/11/13 12:06	7440-43-9	
Chromium, Dissolved	0.14J	ug/L	1.0	0.070	1	07/09/13 16:30	07/11/13 12:06	7440-47-3	B
Cobalt, Dissolved	3.7	ug/L	1.0	0.080	1	07/09/13 16:30	07/11/13 12:06	7440-48-4	D9
Copper, Dissolved	4.7	ug/L	1.0	0.12	1	07/09/13 16:30	07/11/13 12:06	7440-50-8	
Lead, Dissolved	0.25J	ug/L	1.0	0.030	1	07/09/13 16:30	07/11/13 12:06	7439-92-1	B
Manganese, Dissolved	1760	ug/L	1.0	0.14	1	07/09/13 16:30	07/11/13 12:06	7439-96-5	D9
Nickel, Dissolved	4.0	ug/L	1.0	0.070	1	07/09/13 16:30	07/11/13 12:06	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	07/09/13 16:30	07/11/13 12:06	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/10/13 08:45	07/10/13 12:53	7439-97-6	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148381

Sample: DR3A1307070400		Lab ID: 60148381002		Collected: 07/07/13 04:00		Received: 07/09/13 10:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/10/13 08:45	07/10/13 12:22	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	104	mg/L	20.0	1.2	1		07/12/13 09:10		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/12/13 09:10		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/12/13 09:10		
Alkalinity, Total as CaCO ₃	104	mg/L	20.0	1.2	1		07/12/13 09:10		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.48J	mg/L	1.0	0.090	1		07/15/13 11:49	24959-67-9	
Chloride	0.87J	mg/L	1.0	0.50	1		07/15/13 11:49	16887-00-6	
Fluoride	2.1	mg/L	0.20	0.047	1		07/15/13 11:49	16984-48-8	
Sulfate	649	mg/L	50.0	8.0	50		07/12/13 17:51	14808-79-8	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148381

Sample: DR3A1307080400 Lab ID: 60148381003 Collected: 07/08/13 04:00 Received: 07/09/13 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	331	ug/L	75.0	16.6	1	07/09/13 16:30	07/15/13 10:45	7429-90-5	
Calcium	227000	ug/L	100	10.4	1	07/09/13 16:30	07/15/13 10:45	7440-70-2	
Iron	4170	ug/L	50.0	11.6	1	07/09/13 16:30	07/15/13 10:45	7439-89-6	
Lithium	23.8	ug/L	10.0	2.4	1	07/09/13 16:30	07/15/13 10:45	7439-93-2	
Magnesium	18800	ug/L	50.0	6.5	1	07/09/13 16:30	07/15/13 10:45	7439-95-4	
Potassium	4330	ug/L	500	44.4	1	07/09/13 16:30	07/15/13 10:45	7440-09-7	
Silicon	7480	ug/L	500	23.9	1	07/09/13 16:30	07/15/13 10:45	7440-21-3	
Sodium	31000	ug/L	500	21.7	1	07/09/13 16:30	07/15/13 10:45	7440-23-5	
Zinc	3640	ug/L	50.0	3.3	1	07/09/13 16:30	07/15/13 10:45	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	53.3J	ug/L	75.0	16.6	1	07/09/13 16:30	07/10/13 13:46	7429-90-5	
Calcium, Dissolved	227000	ug/L	100	10.4	1	07/09/13 16:30	07/10/13 15:37	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	11.6	1	07/09/13 16:30	07/10/13 13:46	7439-89-6	
Lithium, Dissolved	24.5	ug/L	10.0	2.4	1	07/09/13 16:30	07/10/13 13:46	7439-93-2	D9
Magnesium, Dissolved	19200	ug/L	50.0	6.5	1	07/09/13 16:30	07/10/13 13:46	7439-95-4	D9
Potassium, Dissolved	4820	ug/L	500	44.4	1	07/09/13 16:30	07/10/13 13:46	7440-09-7	D9
Silicon, Dissolved	6810	ug/L	500	23.9	1	07/09/13 16:30	07/10/13 13:46	7440-21-3	
Sodium, Dissolved	34100	ug/L	500	21.7	1	07/09/13 16:30	07/10/13 13:46	7440-23-5	D9
Zinc, Dissolved	3370	ug/L	50.0	3.3	1	07/09/13 16:30	07/10/13 13:46	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.46J	ug/L	1.0	0.050	1	07/09/13 16:30	07/11/13 13:29	7440-38-2	
Cadmium	18.8	ug/L	0.50	0.050	1	07/09/13 16:30	07/11/13 13:29	7440-43-9	
Chromium	0.29J	ug/L	1.0	0.070	1	07/09/13 16:30	07/11/13 13:29	7440-47-3	
Cobalt	2.3	ug/L	1.0	0.080	1	07/09/13 16:30	07/11/13 13:29	7440-48-4	
Copper	74.0	ug/L	1.0	0.12	1	07/09/13 16:30	07/11/13 13:29	7440-50-8	
Lead	4.6	ug/L	1.0	0.030	1	07/09/13 16:30	07/11/13 13:29	7439-92-1	
Manganese	1740	ug/L	1.0	0.14	1	07/09/13 16:30	07/11/13 13:29	7439-96-5	
Nickel	4.1	ug/L	1.0	0.070	1	07/09/13 16:30	07/11/13 13:29	7440-02-0	
Selenium	ND	ug/L	1.0	0.14	1	07/09/13 16:30	07/11/13 13:29	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.071J	ug/L	1.0	0.050	1	07/09/13 16:30	07/11/13 12:10	7440-38-2	
Cadmium, Dissolved	17.9	ug/L	0.50	0.050	1	07/09/13 16:30	07/11/13 12:10	7440-43-9	
Chromium, Dissolved	0.10J	ug/L	1.0	0.070	1	07/09/13 16:30	07/11/13 12:10	7440-47-3	B
Cobalt, Dissolved	3.9	ug/L	1.0	0.080	1	07/09/13 16:30	07/11/13 12:10	7440-48-4	D9
Copper, Dissolved	5.6	ug/L	1.0	0.12	1	07/09/13 16:30	07/11/13 12:10	7440-50-8	
Lead, Dissolved	0.32J	ug/L	1.0	0.030	1	07/09/13 16:30	07/11/13 12:10	7439-92-1	B
Manganese, Dissolved	1810	ug/L	1.0	0.14	1	07/09/13 16:30	07/11/13 12:10	7439-96-5	D9
Nickel, Dissolved	4.1	ug/L	1.0	0.070	1	07/09/13 16:30	07/11/13 12:10	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	07/09/13 16:30	07/11/13 12:10	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/10/13 08:45	07/10/13 13:06	7439-97-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148381

Sample: DR3A1307080400 Lab ID: 60148381003 Collected: 07/08/13 04:00 Received: 07/09/13 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/10/13 08:45	07/10/13 12:35	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	104	mg/L	20.0	1.2	1		07/12/13 09:23		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/12/13 09:23		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/12/13 09:23		
Alkalinity, Total as CaCO ₃	104	mg/L	20.0	1.2	1		07/12/13 09:23		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	0.60J	mg/L	1.0	0.090	1		07/15/13 12:06	24959-67-9	
Chloride	0.89J	mg/L	1.0	0.50	1		07/15/13 12:06	16887-00-6	
Fluoride	2.1	mg/L	0.20	0.047	1		07/15/13 12:06	16984-48-8	
Sulfate	636	mg/L	50.0	8.0	50		07/12/13 19:02	14808-79-8	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148381

QC Batch: MERP/7489 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60148381001, 60148381002, 60148381003

METHOD BLANK: 1217301 Matrix: Water

Associated Lab Samples: 60148381001, 60148381002, 60148381003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	07/10/13 12:37	

LABORATORY CONTROL SAMPLE: 1217302

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.2	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1217303 1217304

Parameter	Units	60148381002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	5.0	5.2	100	104	70-130	4	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148381

QC Batch: MERP/7488 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury - Dissolved
Associated Lab Samples: 60148381001, 60148381002, 60148381003

METHOD BLANK: 1217296 Matrix: Water

Associated Lab Samples: 60148381001, 60148381002, 60148381003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	07/10/13 11:57	

LABORATORY CONTROL SAMPLE: 1217297

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	4.9	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1217298 1217299

Parameter	Units	60148381002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury, Dissolved	ug/L	ND	5	5	5.5	5.0	111	100	70-130	10	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148381

QC Batch: MPRP/23406 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60148381001, 60148381002, 60148381003

METHOD BLANK: 1217182 Matrix: Water

Associated Lab Samples: 60148381001, 60148381002, 60148381003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	07/15/13 10:08	
Calcium	ug/L	ND	100	07/15/13 10:08	
Iron	ug/L	ND	50.0	07/15/13 10:08	
Lithium	ug/L	ND	10.0	07/15/13 10:08	
Magnesium	ug/L	ND	50.0	07/15/13 10:08	
Potassium	ug/L	ND	500	07/15/13 10:08	
Silicon	ug/L	ND	500	07/15/13 10:08	
Sodium	ug/L	ND	500	07/15/13 10:08	
Zinc	ug/L	ND	50.0	07/15/13 10:08	

LABORATORY CONTROL SAMPLE: 1217183

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	9950	100	85-115	
Calcium	ug/L	10000	9970	100	85-115	
Iron	ug/L	10000	10100	101	85-115	
Lithium	ug/L	1000	975	98	85-115	
Magnesium	ug/L	10000	10000	100	85-115	
Potassium	ug/L	10000	9870	99	85-115	
Silicon	ug/L	5000	5010	100	85-115	
Sodium	ug/L	10000	9880	99	85-115	
Zinc	ug/L	1000	996	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1217184 1217185

Parameter	Units	60148379002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	366	10000	10000	10300	10300	100	99	70-130	0	8	
Calcium	ug/L	228000	10000	10000	235000	240000	75	126	70-130	2	9	
Iron	ug/L	4560	10000	10000	14300	14400	98	99	70-130	0	10	
Lithium	ug/L	23.8	1000	1000	1030	1030	101	100	70-130	1	20	
Magnesium	ug/L	18300	10000	10000	27900	28300	96	100	70-130	1	9	
Potassium	ug/L	4960	10000	10000	15200	15200	102	103	70-130	0	7	
Silicon	ug/L	7540	5000	5000	12600	12700	100	102	70-130	1	5	
Sodium	ug/L	31400	10000	10000	41800	42000	104	106	70-130	0	8	
Zinc	ug/L	3540	1000	1000	4480	4520	94	98	70-130	1	11	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148381

QC Batch: MPRP/23402

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60148381001, 60148381002, 60148381003

METHOD BLANK: 1217166

Matrix: Water

Associated Lab Samples: 60148381001, 60148381002, 60148381003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	07/10/13 13:24	
Calcium, Dissolved	ug/L	ND	100	07/10/13 15:15	
Iron, Dissolved	ug/L	ND	50.0	07/10/13 13:24	
Lithium, Dissolved	ug/L	ND	10.0	07/10/13 13:24	
Magnesium, Dissolved	ug/L	ND	50.0	07/10/13 13:24	
Potassium, Dissolved	ug/L	ND	500	07/10/13 13:24	
Silicon, Dissolved	ug/L	ND	500	07/10/13 13:24	
Sodium, Dissolved	ug/L	51.5J	500	07/10/13 13:24	
Zinc, Dissolved	ug/L	ND	50.0	07/10/13 13:24	

LABORATORY CONTROL SAMPLE: 1217167

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	10300	103	85-115	
Calcium, Dissolved	ug/L	10000	9540	95	85-115	
Iron, Dissolved	ug/L	10000	9540	95	85-115	
Lithium, Dissolved	ug/L	1000	1030	103	85-115	
Magnesium, Dissolved	ug/L	10000	9950	99	85-115	
Potassium, Dissolved	ug/L	10000	10800	108	85-115	
Silicon, Dissolved	ug/L	5000	4670	93	85-115	
Sodium, Dissolved	ug/L	10000	10800	108	85-115	
Zinc, Dissolved	ug/L	1000	982	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1217168

1217169

Parameter	Units	60148284001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	56.2J	10000	10000	10200	10500	101	105	70-130	4	8	
Calcium, Dissolved	ug/L	230000	10000	10000	231000	234000	16	37	70-130	1	9	M1
Iron, Dissolved	ug/L	22.2J	10000	10000	9160	9510	91	95	70-130	4	10	
Lithium, Dissolved	ug/L	27.5	1000	1000	1080	1100	105	107	70-130	2	20	
Magnesium, Dissolved	ug/L	19400	10000	10000	28400	29000	90	96	70-130	2	9	
Potassium, Dissolved	ug/L	5150	10000	10000	15700	16300	106	111	70-130	3	7	
Silicon, Dissolved	ug/L	6860	5000	5000	11200	11500	87	94	70-130	3	5	
Sodium, Dissolved	ug/L	30500	10000	10000	40200	41200	97	107	70-130	2	8	
Zinc, Dissolved	ug/L	3440	1000	1000	4290	4360	84	91	70-130	2	11	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148381

QC Batch: MPRP/23404 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60148381001, 60148381002, 60148381003

METHOD BLANK: 1217174 Matrix: Water

Associated Lab Samples: 60148381001, 60148381002, 60148381003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	07/11/13 12:35	
Cadmium	ug/L	ND	0.50	07/11/13 12:35	
Chromium	ug/L	ND	1.0	07/11/13 12:35	
Cobalt	ug/L	ND	1.0	07/11/13 12:35	
Copper	ug/L	ND	1.0	07/11/13 12:35	
Lead	ug/L	0.22J	1.0	07/11/13 12:35	
Manganese	ug/L	ND	1.0	07/11/13 12:35	
Nickel	ug/L	ND	1.0	07/11/13 12:35	
Selenium	ug/L	ND	1.0	07/11/13 12:35	

LABORATORY CONTROL SAMPLE: 1217175

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	39.9	100	85-115	
Cadmium	ug/L	40	40.5	101	85-115	
Chromium	ug/L	40	40.4	101	85-115	
Cobalt	ug/L	40	39.9	100	85-115	
Copper	ug/L	40	40.2	100	85-115	
Lead	ug/L	40	39.8	100	85-115	
Manganese	ug/L	40	40.4	101	85-115	
Nickel	ug/L	40	39.4	99	85-115	
Selenium	ug/L	40	40.2	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1217176 1217177

Parameter	Units	60148379001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	0.54J	40	40	40.9	41.2	101	102	70-130	1	20	
Cadmium	ug/L	19.5	40	40	58.9	59.1	98	99	70-130	0	20	
Chromium	ug/L	0.48J	40	40	39.2	39.2	97	97	70-130	0	20	
Cobalt	ug/L	2.4	40	40	40.5	40.5	95	95	70-130	0	20	
Copper	ug/L	83.0	40	40	119	121	89	94	70-130	2	20	
Lead	ug/L	5.2	40	40	44.4	44.6	98	98	70-130	0	20	
Manganese	ug/L	1760	40	40	1770	1810	38	132	70-130	2	20 M1	
Nickel	ug/L	4.2	40	40	41.3	41.8	93	94	70-130	1	20	
Selenium	ug/L	ND	40	40	40.2	40.8	100	102	70-130	1	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148381

QC Batch: MPRP/23403 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60148381001, 60148381002, 60148381003

METHOD BLANK: 1217170 Matrix: Water

Associated Lab Samples: 60148381001, 60148381002, 60148381003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	07/11/13 11:16	
Cadmium, Dissolved	ug/L	ND	0.50	07/11/13 11:16	
Chromium, Dissolved	ug/L	0.15J	1.0	07/11/13 11:16	
Cobalt, Dissolved	ug/L	ND	1.0	07/11/13 11:16	
Copper, Dissolved	ug/L	0.20J	1.0	07/11/13 11:16	
Lead, Dissolved	ug/L	0.22J	1.0	07/11/13 11:16	
Manganese, Dissolved	ug/L	ND	1.0	07/11/13 11:16	
Nickel, Dissolved	ug/L	ND	1.0	07/11/13 11:16	
Selenium, Dissolved	ug/L	ND	1.0	07/11/13 11:16	

LABORATORY CONTROL SAMPLE: 1217171

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	39.5	99	85-115	
Cadmium, Dissolved	ug/L	40	40.0	100	85-115	
Chromium, Dissolved	ug/L	40	40.9	102	85-115	
Cobalt, Dissolved	ug/L	40	39.9	100	85-115	
Copper, Dissolved	ug/L	40	40.6	102	85-115	
Lead, Dissolved	ug/L	40	39.1	98	85-115	
Manganese, Dissolved	ug/L	40	40.2	100	85-115	
Nickel, Dissolved	ug/L	40	40.2	101	85-115	
Selenium, Dissolved	ug/L	40	39.3	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1217172 1217173

Parameter	Units	60148379001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	0.10J	40	40	41.5	41.1	104	103	70-130	1	20	
Cadmium, Dissolved	ug/L	18.2	40	40	58.3	58.0	100	100	70-130	1	20	
Chromium, Dissolved	ug/L	0.52J	40	40	39.9	39.7	98	98	70-130	0	20	
Cobalt, Dissolved	ug/L	3.6	40	40	42.3	42.3	97	97	70-130	0	20	
Copper, Dissolved	ug/L	6.4	40	40	44.1	43.8	94	93	70-130	1	20	
Lead, Dissolved	ug/L	0.28J	40	40	39.6	39.3	98	98	70-130	1	20	
Manganese, Dissolved	ug/L	1780	40	40	1850	1870	168	208	70-130	1	20 M1	
Nickel, Dissolved	ug/L	4.3	40	40	42.6	42.1	96	95	70-130	1	20	
Selenium, Dissolved	ug/L	ND	40	40	41.6	40.5	104	101	70-130	3	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148381

QC Batch: WET/42308

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60148381001, 60148381002, 60148381003

METHOD BLANK: 1218645

Matrix: Water

Associated Lab Samples: 60148381001, 60148381002, 60148381003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	07/12/13 08:33	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	07/12/13 08:33	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	07/12/13 08:33	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	07/12/13 08:33	

LABORATORY CONTROL SAMPLE: 1218646

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	506	101	90-110	

SAMPLE DUPLICATE: 1218649

Parameter	Units	60148348001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	526	526	0	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	526	526	0	10	

SAMPLE DUPLICATE: 1218650

Parameter	Units	60148416001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	381	384	1	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	381	384	1	10	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148381

QC Batch: WETA/25434 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60148381001, 60148381002, 60148381003

METHOD BLANK: 1218953 Matrix: Water

Associated Lab Samples: 60148381001, 60148381002, 60148381003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.0	07/15/13 09:05	

METHOD BLANK: 1220497 Matrix: Water

Associated Lab Samples: 60148381001, 60148381002, 60148381003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	07/15/13 09:05	
Chloride	mg/L	ND	1.0	07/15/13 09:05	
Fluoride	mg/L	ND	0.20	07/15/13 09:05	

LABORATORY CONTROL SAMPLE: 1218954

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	4.8	95	90-110	

LABORATORY CONTROL SAMPLE: 1220498

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.7	93	90-110	
Chloride	mg/L	5	4.7	94	90-110	
Fluoride	mg/L	2.5	2.3	92	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1218955 1218956

Parameter	Units	60148379001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	0.61J	5	5	5.3	5.3	93	94	75-119	1	10	
Chloride	mg/L	0.89J	5	5	5.4	5.4	90	90	64-118	0	12	
Fluoride	mg/L	2.3	2.5	2.5	4.7	4.7	98	98	75-110	0	10	
Sulfate	mg/L	647	250	250	881	892	94	98	61-119	1	10	

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148381

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148381

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60148381001	DR3A1307060400	EPA 200.7	MPRP/23406	EPA 200.7	ICP/18413
60148381002	DR3A1307070400	EPA 200.7	MPRP/23406	EPA 200.7	ICP/18413
60148381003	DR3A1307080400	EPA 200.7	MPRP/23406	EPA 200.7	ICP/18413
60148381001	DR3A1307060400	EPA 200.7	MPRP/23402	EPA 200.7	ICP/18414
60148381002	DR3A1307070400	EPA 200.7	MPRP/23402	EPA 200.7	ICP/18414
60148381003	DR3A1307080400	EPA 200.7	MPRP/23402	EPA 200.7	ICP/18414
60148381001	DR3A1307060400	EPA 200.8	MPRP/23404	EPA 200.8	ICPM/2375
60148381002	DR3A1307070400	EPA 200.8	MPRP/23404	EPA 200.8	ICPM/2375
60148381003	DR3A1307080400	EPA 200.8	MPRP/23404	EPA 200.8	ICPM/2375
60148381001	DR3A1307060400	EPA 200.8	MPRP/23403	EPA 200.8	ICPM/2376
60148381002	DR3A1307070400	EPA 200.8	MPRP/23403	EPA 200.8	ICPM/2376
60148381003	DR3A1307080400	EPA 200.8	MPRP/23403	EPA 200.8	ICPM/2376
60148381001	DR3A1307060400	EPA 245.1	MERP/7489	EPA 245.1	MERC/7446
60148381002	DR3A1307070400	EPA 245.1	MERP/7489	EPA 245.1	MERC/7446
60148381003	DR3A1307080400	EPA 245.1	MERP/7489	EPA 245.1	MERC/7446
60148381001	DR3A1307060400	EPA 245.1	MERP/7488	EPA 245.1	MERC/7445
60148381002	DR3A1307070400	EPA 245.1	MERP/7488	EPA 245.1	MERC/7445
60148381003	DR3A1307080400	EPA 245.1	MERP/7488	EPA 245.1	MERC/7445
60148381001	DR3A1307060400	SM 2320B	WET/42308		
60148381002	DR3A1307070400	SM 2320B	WET/42308		
60148381003	DR3A1307080400	SM 2320B	WET/42308		
60148381001	DR3A1307060400	EPA 300.0	WETA/25434		
60148381002	DR3A1307070400	EPA 300.0	WETA/25434		
60148381003	DR3A1307080400	EPA 300.0	WETA/25434		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt
ESI Tech Spec Client

WO#: 60148381



Client Name:

BP AMEC
~~BP Eco~~ Amw 7/9/13

Optional

Proj Due Date:

Proj Name:

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 1Z 733 487 22 1006 0963 Pace Shipping Label Used? Yes ☐ No ☒

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☒ Other ☐

Thermometer Used: T-112 / T-194

Type of Ice: Wet Blue None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature:

0.4

Date and initials of person examining contents: KE 7/9/13

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses	Matrix: <u>WT</u>	13.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	17. List State:

Client Notification/ Resolution:

Copy COC to Client? Y / N

Field Data Required? Y / N

Person Contacted: _____

Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Amw

Date: 7/9/13

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: 11:05	Start:
End: 11:15	End:
Temp: 0.4	Temp:

Laboratory Management Program LaMP Chain of Custody Record

Page 1 of 1

BP/ARC Project Name: Rico-Argentine Mine Site

Req Due Date (mm/dd/yy): _____

Rush TAT: Yes X No _____

BP/ARC Facility No: _____

Lab Work Order Number: _____

Lab Name: Pace Analytical Laboratories, Inc.				BP/ARC Facility Address: Rico-Argentine Mine				Consultant/Contractor: AMEC E&I, Inc.			
Lab Address: 9608 Loiret Blvd., Lenexa, KS 66219				City, State, ZIP Code: Rico, Colorado				Consultant/Contractor Project No: SA11161313.300H			
Lab PM: Heather Wilson				Lead Regulatory Agency: U.S. EPA Region 8				Address: 10670 White Rock Road, Suite 100, Rancho Cordova, CA			
Lab Phone: (913) 563-1407				California Global ID No.: NA				Consultant/Contractor PM: Marc Lombardi			
Lab Shipping Acct: UPS # 733W87				Enfos Proposal No: D00LL-0010 WR 266494				Phone: 916-636-3200			
Lab Bottle Order No: NA				Accounting Mode: Provision <u>X</u> OOC-BU _____ OOC-RM _____				Email Report/EDD To: lynda.lombardi@amec.com			
Other Info: 2013 517 Injection Treatability Study				Stage: 4-Execute Activity: Spend				Invoice To: BP/ARC <u>X</u> Contractor _____			

BP/ARC EBM: Anthony Brown				Matrix		No. Containers / Preservative		Requested Analyses										Report Type & QC Level			
EBM Phone: 714-228-6770																		Standard <u>X</u>			
EBM Email: anthony.brown@bp.com																		Full Data Package _____			
Lab No.	Sample Description	Date	Time	Sol / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Methanol	Tot Metals-see notes (E200.7/200.8/E245.1)	Dis Metals-see notes (E200.7/200.8/E245.1)	Alkalinity-Total HCO ₃ , CO ₃ , OH (SM2320B)	Bromide (E300.0)	Chloride (E300.0)	Fluoride (E300.0)	Sulfate (E300.0)	Comments	
01	DR3A1307060400	7/6/13	400	X			3	1	2		1 (BP2U)		X	X	X	X	X	X	X	2 (BP3N)	Dissolved metals samples are field filtered
02	DR3A1307070400	7/7/13	400	X			3	1	2		1		X	X	X	X	X	X	X	1.5	
03	DR3A1307080400	7/8/13	400	X			3	1	2		1		X	X	X	X	X	X	X	1.5	Metals are: Al, Ca, Fe, K, Li, Na, Mg, Si, Zn (E200.7); As, Cd, Co, Cr, Cu, Mn, Ni, Pb, Se (E200.8); and Hg (E245.1)
RUSH 5-day TAT																					

Sampler's Name: <u>Kyle Wyatt</u>		Relinquished By / Affiliation: <u>Kyle Wyatt / AMEC</u>		Date: <u>7/8/13</u>	Time: <u>1500</u>	Accepted By / Affiliation: <u>Kyle Wyatt / PASS</u>		Date: <u>7/9/13</u>	Time: <u>10:00</u>
Sampler's Company: <u>AMEC</u>									
Shipment Method: <u>UPS</u>		Ship Date: <u>7/8/13</u>							
Shipment Tracking No: <u>1Z 733 W87 22 1006 0863</u>									
Shipment Tracking No: <u>1Z 733 W87 22 1006 0872</u>									
Special Instructions:									

THIS LINE - LAB USE ONLY: Custody Seals In Place Yes No Temp Blank Yes No Cooler Temp on Receipt: 04 °F/C Trip Blank: Yes No MS/MSD Sample Submitted: Yes / No

August 15, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: Rico-Argentine Mine Site
Pace Project No.: 60148602

Revised Report 8/15/13_rev.1
60148602005 Re-analyzed for confirmation of sulfate

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on July 11, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148602

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Rico-Argentine Mine Site

Pace Project No.: 60148602

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60148602001	DR3A1307090400	Water	07/09/13 04:00	07/11/13 10:25
60148602002	DR3A1307100400	Water	07/10/13 04:00	07/11/13 10:25
60148602003	BLAINEOBF130709	Water	07/09/13 13:05	07/11/13 10:25
60148602004	BLAINEIBF130709	Water	07/09/13 13:10	07/11/13 10:25
60148602005	517SHAFT465130709	Water	07/09/13 15:00	07/11/13 10:25

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Rico-Argentine Mine Site
Pace Project No.: 60148602

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60148602001	DR3A1307090400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60148602002	DR3A1307100400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60148602003	BLAINEOBF130709	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60148602004	BLAINEIBF130709	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60148602005	517SHAFT465130709	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Rico-Argentine Mine Site

Pace Project No.: 60148602

Lab ID	Sample ID	Method	Analysts	Analytes Reported
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60148602

Method: EPA 200.7
Description: 200.7 Metals, Total
Client: BP AMEC
Date: August 15, 2013

General Information:

5 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23456

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60148602003

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1219402)
 - Calcium
 - Iron
 - Magnesium
 - Zinc
- MSD (Lab ID: 1219403)
 - Zinc

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60148602

Method: EPA 200.7
Description: 200.7 Metals, Dissolved
Client: BP AMEC
Date: August 15, 2013

General Information:

5 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23454

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60148602003

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1219392)
 - Iron, Dissolved
 - Zinc, Dissolved
- MSD (Lab ID: 1219393)
 - Aluminum, Dissolved
 - Calcium, Dissolved
 - Iron, Dissolved
 - Magnesium, Dissolved
 - Zinc, Dissolved

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148602

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: August 15, 2013

General Information:

5 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23455

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60148602002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1219397)
 - Manganese
- MSD (Lab ID: 1219398)
 - Manganese

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148602

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: August 15, 2013

General Information:

5 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23457

B: Analyte was detected in the associated method blank.

- BLANK for HBN 298522 [MPRP/234 (Lab ID: 1219404)]
 - Lead, Dissolved
 - Manganese, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23457

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60148602002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1219406)
 - Manganese, Dissolved
- MSD (Lab ID: 1219407)
 - Manganese, Dissolved

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148602

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: August 15, 2013

General Information:

5 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60148602

Method: EPA 245.1
Description: 245.1 Mercury, Dissolved
Client: BP AMEC
Date: August 15, 2013

General Information:

5 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148602

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: August 15, 2013

General Information:

5 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: WET/42339

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- BLAINEIBF130709 (Lab ID: 60148602004)
 - Alkalinity, Bicarbonate (CaCO₃)
 - Alkalinity, Carbonate (CaCO₃)
 - Alkalinity, Hydroxide (CaCO₃)
 - Alkalinity, Total as CaCO₃
- BLAINEOBF130709 (Lab ID: 60148602003)
 - Alkalinity, Bicarbonate (CaCO₃)
 - Alkalinity, Carbonate (CaCO₃)
 - Alkalinity, Hydroxide (CaCO₃)
 - Alkalinity, Total as CaCO₃

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60148602

Method: EPA 300.0
Description: 300.0 IC Anions 28 Days
Client: BP AMEC
Date: August 15, 2013

General Information:

5 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

- H1: Analysis conducted outside the EPA method holding time.
- 517SHAFT465130709 (Lab ID: 60148602005)

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: WETA/25461

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60148416002,60148602003

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1220522)
 - Bromide
 - Fluoride
 - Sulfate

QC Batch: WETA/25786

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60150875001

R1: RPD value was outside control limits.

- MSD (Lab ID: 1235895)
 - Sulfate

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148602

Sample: DR3A1307090400 Lab ID: 60148602001 Collected: 07/09/13 04:00 Received: 07/11/13 10:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	328	ug/L	75.0	16.6	1	07/12/13 16:15	07/16/13 12:06	7429-90-5	
Calcium	230000	ug/L	100	10.4	1	07/12/13 16:15	07/16/13 12:06	7440-70-2	
Iron	3810	ug/L	50.0	11.6	1	07/12/13 16:15	07/16/13 12:06	7439-89-6	
Lithium	25.9	ug/L	10.0	2.4	1	07/12/13 16:15	07/16/13 12:06	7439-93-2	
Magnesium	19200	ug/L	50.0	6.5	1	07/12/13 16:15	07/16/13 12:06	7439-95-4	
Potassium	4810	ug/L	500	44.4	1	07/12/13 16:15	07/16/13 12:06	7440-09-7	
Silicon	7550	ug/L	500	23.9	1	07/12/13 16:15	07/16/13 12:06	7440-21-3	
Sodium	38000	ug/L	500	21.7	1	07/12/13 16:15	07/16/13 12:06	7440-23-5	
Zinc	3460	ug/L	50.0	3.3	1	07/12/13 16:15	07/16/13 12:06	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	57.5J	ug/L	75.0	16.6	1	07/12/13 16:15	07/16/13 13:00	7429-90-5	
Calcium, Dissolved	226000	ug/L	100	10.4	1	07/12/13 16:15	07/16/13 13:00	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	11.6	1	07/12/13 16:15	07/16/13 13:00	7439-89-6	
Lithium, Dissolved	26.1	ug/L	10.0	2.4	1	07/12/13 16:15	07/16/13 13:00	7439-93-2	D9
Magnesium, Dissolved	19100	ug/L	50.0	6.5	1	07/12/13 16:15	07/16/13 13:00	7439-95-4	
Potassium, Dissolved	4840	ug/L	500	44.4	1	07/12/13 16:15	07/16/13 13:00	7440-09-7	D9
Silicon, Dissolved	7030	ug/L	500	23.9	1	07/12/13 16:15	07/16/13 13:00	7440-21-3	
Sodium, Dissolved	37900	ug/L	500	21.7	1	07/12/13 16:15	07/16/13 13:00	7440-23-5	
Zinc, Dissolved	3080	ug/L	50.0	3.3	1	07/12/13 16:15	07/16/13 13:00	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.38J	ug/L	1.0	0.050	1	07/12/13 16:15	07/16/13 13:17	7440-38-2	
Cadmium	17.2	ug/L	0.50	0.050	1	07/12/13 16:15	07/16/13 13:17	7440-43-9	
Chromium	ND	ug/L	1.0	0.070	1	07/12/13 16:15	07/16/13 13:17	7440-47-3	
Cobalt	2.3	ug/L	1.0	0.080	1	07/12/13 16:15	07/16/13 13:17	7440-48-4	
Copper	69.4	ug/L	1.0	0.12	1	07/12/13 16:15	07/16/13 13:17	7440-50-8	
Lead	4.0	ug/L	1.0	0.030	1	07/12/13 16:15	07/16/13 13:17	7439-92-1	
Manganese	1640	ug/L	1.0	0.14	1	07/12/13 16:15	07/16/13 13:17	7439-96-5	
Nickel	3.5	ug/L	1.0	0.070	1	07/12/13 16:15	07/16/13 13:17	7440-02-0	
Selenium	ND	ug/L	1.0	0.14	1	07/12/13 16:15	07/16/13 13:17	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	1.0	0.050	1	07/12/13 16:15	07/16/13 11:38	7440-38-2	
Cadmium, Dissolved	15.5	ug/L	0.50	0.050	1	07/12/13 16:15	07/16/13 11:38	7440-43-9	
Chromium, Dissolved	ND	ug/L	1.0	0.070	1	07/12/13 16:15	07/16/13 11:38	7440-47-3	
Cobalt, Dissolved	4.3	ug/L	1.0	0.080	1	07/12/13 16:15	07/16/13 11:38	7440-48-4	D9
Copper, Dissolved	4.9	ug/L	1.0	0.12	1	07/12/13 16:15	07/16/13 11:38	7440-50-8	
Lead, Dissolved	0.22J	ug/L	1.0	0.030	1	07/12/13 16:15	07/16/13 11:38	7439-92-1	B
Manganese, Dissolved	1680	ug/L	1.0	0.14	1	07/12/13 16:15	07/16/13 11:38	7439-96-5	D9
Nickel, Dissolved	3.8	ug/L	1.0	0.070	1	07/12/13 16:15	07/16/13 11:38	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	07/12/13 16:15	07/16/13 11:38	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/12/13 09:00	07/12/13 14:41	7439-97-6	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148602

Sample: DR3A1307090400		Lab ID: 60148602001		Collected: 07/09/13 04:00		Received: 07/11/13 10:25		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/12/13 09:00	07/12/13 14:12	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	113	mg/L	20.0	1.2	1		07/15/13 12:01		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/15/13 12:01		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/15/13 12:01		
Alkalinity, Total as CaCO ₃	113	mg/L	20.0	1.2	1		07/15/13 12:01		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.090	1		07/16/13 12:37	24959-67-9	
Chloride	0.88J	mg/L	1.0	0.50	1		07/16/13 12:37	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.047	1		07/16/13 12:37	16984-48-8	
Sulfate	749	mg/L	50.0	8.0	50		07/16/13 12:52	14808-79-8	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148602

Sample: DR3A1307100400 Lab ID: 60148602002 Collected: 07/10/13 04:00 Received: 07/11/13 10:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	304	ug/L	75.0	16.6	1	07/12/13 16:15	07/16/13 12:09	7429-90-5	
Calcium	238000	ug/L	100	10.4	1	07/12/13 16:15	07/16/13 12:09	7440-70-2	
Iron	4030	ug/L	50.0	11.6	1	07/12/13 16:15	07/16/13 12:09	7439-89-6	
Lithium	24.6	ug/L	10.0	2.4	1	07/12/13 16:15	07/16/13 12:09	7439-93-2	
Magnesium	20000	ug/L	50.0	6.5	1	07/12/13 16:15	07/16/13 12:09	7439-95-4	
Potassium	4050	ug/L	500	44.4	1	07/12/13 16:15	07/16/13 12:09	7440-09-7	
Silicon	7860	ug/L	500	23.9	1	07/12/13 16:15	07/16/13 12:09	7440-21-3	
Sodium	25800	ug/L	500	21.7	1	07/12/13 16:15	07/16/13 12:09	7440-23-5	
Zinc	3780	ug/L	50.0	3.3	1	07/12/13 16:15	07/16/13 12:09	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	55.1J	ug/L	75.0	16.6	1	07/12/13 16:15	07/16/13 13:03	7429-90-5	
Calcium, Dissolved	234000	ug/L	100	10.4	1	07/12/13 16:15	07/16/13 13:03	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	11.6	1	07/12/13 16:15	07/16/13 13:03	7439-89-6	
Lithium, Dissolved	24.3	ug/L	10.0	2.4	1	07/12/13 16:15	07/16/13 13:03	7439-93-2	
Magnesium, Dissolved	20500	ug/L	50.0	6.5	1	07/12/13 16:15	07/17/13 09:05	7439-95-4	D9
Potassium, Dissolved	4060	ug/L	500	44.4	1	07/12/13 16:15	07/16/13 13:03	7440-09-7	D9
Silicon, Dissolved	7410	ug/L	500	23.9	1	07/12/13 16:15	07/16/13 13:03	7440-21-3	
Sodium, Dissolved	26000	ug/L	500	21.7	1	07/12/13 16:15	07/16/13 13:03	7440-23-5	D9
Zinc, Dissolved	3420	ug/L	50.0	3.3	1	07/12/13 16:15	07/16/13 13:03	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.28J	ug/L	1.0	0.050	1	07/12/13 16:15	07/16/13 13:21	7440-38-2	
Cadmium	19.8	ug/L	0.50	0.050	1	07/12/13 16:15	07/16/13 13:21	7440-43-9	
Chromium	ND	ug/L	1.0	0.070	1	07/12/13 16:15	07/16/13 13:21	7440-47-3	
Cobalt	2.4	ug/L	1.0	0.080	1	07/12/13 16:15	07/16/13 13:21	7440-48-4	
Copper	60.3	ug/L	1.0	0.12	1	07/12/13 16:15	07/16/13 13:21	7440-50-8	
Lead	3.5	ug/L	1.0	0.030	1	07/12/13 16:15	07/16/13 13:21	7439-92-1	
Manganese	1820	ug/L	1.0	0.14	1	07/12/13 16:15	07/16/13 13:21	7439-96-5	M1
Nickel	3.8	ug/L	1.0	0.070	1	07/12/13 16:15	07/16/13 13:21	7440-02-0	
Selenium	ND	ug/L	1.0	0.14	1	07/12/13 16:15	07/16/13 13:21	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.066J	ug/L	1.0	0.050	1	07/12/13 16:15	07/16/13 11:42	7440-38-2	
Cadmium, Dissolved	18.6	ug/L	0.50	0.050	1	07/12/13 16:15	07/16/13 11:42	7440-43-9	
Chromium, Dissolved	ND	ug/L	1.0	0.070	1	07/12/13 16:15	07/16/13 11:42	7440-47-3	
Cobalt, Dissolved	3.9	ug/L	1.0	0.080	1	07/12/13 16:15	07/16/13 11:42	7440-48-4	D9
Copper, Dissolved	4.4	ug/L	1.0	0.12	1	07/12/13 16:15	07/16/13 11:42	7440-50-8	
Lead, Dissolved	0.22J	ug/L	1.0	0.030	1	07/12/13 16:15	07/16/13 11:42	7439-92-1	B
Manganese, Dissolved	1860	ug/L	1.0	0.14	1	07/12/13 16:15	07/16/13 11:42	7439-96-5	D9,M1
Nickel, Dissolved	4.1	ug/L	1.0	0.070	1	07/12/13 16:15	07/16/13 11:42	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	07/12/13 16:15	07/16/13 11:42	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/12/13 09:00	07/12/13 14:47	7439-97-6	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148602

Sample: DR3A1307100400		Lab ID: 60148602002		Collected: 07/10/13 04:00		Received: 07/11/13 10:25		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/12/13 09:00	07/12/13 14:18	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	103	mg/L	20.0	1.2	1		07/15/13 12:04		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/15/13 12:04		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/15/13 12:04		
Alkalinity, Total as CaCO ₃	103	mg/L	20.0	1.2	1		07/15/13 12:04		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.090	1		07/16/13 13:08	24959-67-9	
Chloride	0.68J	mg/L	1.0	0.50	1		07/16/13 13:08	16887-00-6	
Fluoride	2.1	mg/L	0.20	0.047	1		07/16/13 13:08	16984-48-8	
Sulfate	719	mg/L	50.0	8.0	50		07/16/13 13:23	14808-79-8	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148602

Sample: BLAINEOBF130709 Lab ID: 60148602003 Collected: 07/09/13 13:05 Received: 07/11/13 10:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	255000	ug/L	375	83.0	5	07/12/13 16:15	07/16/13 12:12	7429-90-5	
Calcium	388000	ug/L	500	51.8	5	07/12/13 16:15	07/16/13 12:12	7440-70-2	M1
Iron	1640000	ug/L	250	58.0	5	07/12/13 16:15	07/16/13 12:12	7439-89-6	M1
Lithium	302	ug/L	50.0	12.1	5	07/12/13 16:15	07/16/13 12:12	7439-93-2	
Magnesium	220000	ug/L	250	32.4	5	07/12/13 16:15	07/16/13 12:12	7439-95-4	M1
Potassium	2690	ug/L	2500	222	5	07/12/13 16:15	07/16/13 12:12	7440-09-7	
Silicon	43800	ug/L	2500	120	5	07/12/13 16:15	07/16/13 12:12	7440-21-3	
Sodium	8720	ug/L	2500	108	5	07/12/13 16:15	07/16/13 12:12	7440-23-5	
Zinc	231000	ug/L	1000	66.6	20	07/12/13 16:15	07/16/13 16:32	7440-66-6	M1
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	251000	ug/L	375	83.0	5	07/12/13 16:15	07/16/13 13:06	7429-90-5	M1
Calcium, Dissolved	379000	ug/L	500	51.8	5	07/12/13 16:15	07/16/13 13:06	7440-70-2	M1
Iron, Dissolved	1600000	ug/L	250	58.0	5	07/12/13 16:15	07/16/13 13:06	7439-89-6	M1
Lithium, Dissolved	288	ug/L	50.0	12.1	5	07/12/13 16:15	07/16/13 13:06	7439-93-2	
Magnesium, Dissolved	215000	ug/L	250	32.4	5	07/12/13 16:15	07/16/13 13:06	7439-95-4	M1
Potassium, Dissolved	2580	ug/L	2500	222	5	07/12/13 16:15	07/16/13 13:06	7440-09-7	
Silicon, Dissolved	42600	ug/L	2500	120	5	07/12/13 16:15	07/16/13 13:06	7440-21-3	
Sodium, Dissolved	8550	ug/L	2500	108	5	07/12/13 16:15	07/16/13 13:06	7440-23-5	
Zinc, Dissolved	231000	ug/L	1000	66.6	20	07/12/13 16:15	07/16/13 16:49	7440-66-6	M1
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	608	ug/L	5.0	0.25	5	07/12/13 16:15	07/16/13 13:38	7440-38-2	
Cadmium	1610	ug/L	2.5	0.25	5	07/12/13 16:15	07/16/13 13:38	7440-43-9	
Chromium	211	ug/L	5.0	0.35	5	07/12/13 16:15	07/16/13 13:38	7440-47-3	
Cobalt	246	ug/L	5.0	0.40	5	07/12/13 16:15	07/16/13 13:38	7440-48-4	
Copper	26800	ug/L	50.0	6.0	50	07/12/13 16:15	07/16/13 13:48	7440-50-8	
Lead	201	ug/L	5.0	0.15	5	07/12/13 16:15	07/16/13 13:38	7439-92-1	
Manganese	105000	ug/L	50.0	7.0	50	07/12/13 16:15	07/16/13 13:48	7439-96-5	
Nickel	378	ug/L	5.0	0.35	5	07/12/13 16:15	07/16/13 13:38	7440-02-0	
Selenium	29.4	ug/L	5.0	0.70	5	07/12/13 16:15	07/16/13 13:38	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	608	ug/L	5.0	0.25	5	07/12/13 16:15	07/16/13 11:58	7440-38-2	
Cadmium, Dissolved	1610	ug/L	2.5	0.25	5	07/12/13 16:15	07/16/13 11:58	7440-43-9	
Chromium, Dissolved	212	ug/L	5.0	0.35	5	07/12/13 16:15	07/16/13 11:58	7440-47-3	D9
Cobalt, Dissolved	248	ug/L	5.0	0.40	5	07/12/13 16:15	07/16/13 11:58	7440-48-4	D9
Copper, Dissolved	25000	ug/L	50.0	6.0	50	07/12/13 16:15	07/16/13 14:34	7440-50-8	
Lead, Dissolved	201	ug/L	5.0	0.15	5	07/12/13 16:15	07/16/13 11:58	7439-92-1	
Manganese, Dissolved	103000	ug/L	50.0	7.0	50	07/12/13 16:15	07/16/13 14:34	7439-96-5	
Nickel, Dissolved	380	ug/L	5.0	0.35	5	07/12/13 16:15	07/16/13 11:58	7440-02-0	D9
Selenium, Dissolved	29.6	ug/L	5.0	0.70	5	07/12/13 16:15	07/16/13 11:58	7782-49-2	D9
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/12/13 09:00	07/12/13 14:58	7439-97-6	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148602

Sample: BLAINEOBF130709		Lab ID: 60148602003		Collected: 07/09/13 13:05		Received: 07/11/13 10:25		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND ug/L		0.20	0.14	1	07/12/13 09:00	07/12/13 14:20	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	ND mg/L		40.0	2.4	2		07/15/13 12:06		D3
Alkalinity, Carbonate (CaCO ₃)	ND mg/L		40.0	2.4	2		07/15/13 12:06		D3
Alkalinity, Hydroxide (CaCO ₃)	ND mg/L		40.0	2.4	2		07/15/13 12:06		D3
Alkalinity, Total as CaCO ₃	ND mg/L		40.0	2.4	2		07/15/13 12:06		D3
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND mg/L		1.0	0.090	1		07/16/13 14:09	24959-67-9	M1
Chloride	2.5 mg/L		1.0	0.50	1		07/16/13 14:09	16887-00-6	
Fluoride	85.8 mg/L		10.0	2.4	50		07/16/13 14:40	16984-48-8	M1
Sulfate	18500 mg/L		2000	320	2000		07/17/13 10:03	14808-79-8	M1

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148602

Sample: BLAINEIBF130709 Lab ID: 60148602004 Collected: 07/09/13 13:10 Received: 07/11/13 10:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	258000	ug/L	375	83.0	5	07/12/13 16:15	07/16/13 12:25	7429-90-5	
Calcium	379000	ug/L	500	51.8	5	07/12/13 16:15	07/16/13 12:25	7440-70-2	
Iron	1490000	ug/L	250	58.0	5	07/12/13 16:15	07/16/13 12:25	7439-89-6	
Lithium	288	ug/L	50.0	12.1	5	07/12/13 16:15	07/16/13 12:25	7439-93-2	
Magnesium	221000	ug/L	250	32.4	5	07/12/13 16:15	07/16/13 12:25	7439-95-4	
Potassium	3320	ug/L	2500	222	5	07/12/13 16:15	07/16/13 12:25	7440-09-7	
Silicon	42500	ug/L	2500	120	5	07/12/13 16:15	07/16/13 12:25	7440-21-3	
Sodium	4270	ug/L	2500	108	5	07/12/13 16:15	07/16/13 12:25	7440-23-5	
Zinc	197000	ug/L	1000	66.6	20	07/12/13 16:15	07/16/13 16:45	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	255000	ug/L	375	83.0	5	07/12/13 16:15	07/16/13 13:29	7429-90-5	
Calcium, Dissolved	373000	ug/L	500	51.8	5	07/12/13 16:15	07/16/13 13:29	7440-70-2	
Iron, Dissolved	1460000	ug/L	250	58.0	5	07/12/13 16:15	07/16/13 13:29	7439-89-6	
Lithium, Dissolved	286	ug/L	50.0	12.1	5	07/12/13 16:15	07/16/13 13:29	7439-93-2	
Magnesium, Dissolved	219000	ug/L	250	32.4	5	07/12/13 16:15	07/16/13 13:29	7439-95-4	
Potassium, Dissolved	3200	ug/L	2500	222	5	07/12/13 16:15	07/16/13 13:29	7440-09-7	
Silicon, Dissolved	41600	ug/L	2500	120	5	07/12/13 16:15	07/16/13 13:29	7440-21-3	
Sodium, Dissolved	4140	ug/L	2500	108	5	07/12/13 16:15	07/16/13 13:29	7440-23-5	
Zinc, Dissolved	200000	ug/L	1000	66.6	20	07/12/13 16:15	07/16/13 17:08	7440-66-6	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	38.6	ug/L	5.0	0.25	5	07/12/13 16:15	07/16/13 13:42	7440-38-2	
Cadmium	1320	ug/L	2.5	0.25	5	07/12/13 16:15	07/16/13 13:42	7440-43-9	
Chromium	216	ug/L	5.0	0.35	5	07/12/13 16:15	07/16/13 13:42	7440-47-3	
Cobalt	220	ug/L	5.0	0.40	5	07/12/13 16:15	07/16/13 13:42	7440-48-4	
Copper	26000	ug/L	50.0	6.0	50	07/12/13 16:15	07/16/13 14:09	7440-50-8	
Lead	163	ug/L	5.0	0.15	5	07/12/13 16:15	07/16/13 13:42	7439-92-1	
Manganese	97000	ug/L	50.0	7.0	50	07/12/13 16:15	07/16/13 14:09	7439-96-5	
Nickel	374	ug/L	5.0	0.35	5	07/12/13 16:15	07/16/13 13:42	7440-02-0	
Selenium	22.4	ug/L	5.0	0.70	5	07/12/13 16:15	07/16/13 13:42	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	39.5	ug/L	5.0	0.25	5	07/12/13 16:15	07/16/13 12:02	7440-38-2	D9
Cadmium, Dissolved	1340	ug/L	2.5	0.25	5	07/12/13 16:15	07/16/13 12:02	7440-43-9	D9
Chromium, Dissolved	223	ug/L	5.0	0.35	5	07/12/13 16:15	07/16/13 12:02	7440-47-3	D9
Cobalt, Dissolved	226	ug/L	5.0	0.40	5	07/12/13 16:15	07/16/13 12:02	7440-48-4	D9
Copper, Dissolved	25200	ug/L	50.0	6.0	50	07/12/13 16:15	07/16/13 14:38	7440-50-8	
Lead, Dissolved	164	ug/L	5.0	0.15	5	07/12/13 16:15	07/16/13 12:02	7439-92-1	D9
Manganese, Dissolved	97800	ug/L	50.0	7.0	50	07/12/13 16:15	07/16/13 14:38	7439-96-5	D9
Nickel, Dissolved	388	ug/L	5.0	0.35	5	07/12/13 16:15	07/16/13 12:02	7440-02-0	D9
Selenium, Dissolved	23.8	ug/L	5.0	0.70	5	07/12/13 16:15	07/16/13 12:02	7782-49-2	D9
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/12/13 09:00	07/12/13 15:01	7439-97-6	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148602

Sample: BLAINEIBF130709 Lab ID: 60148602004 Collected: 07/09/13 13:10 Received: 07/11/13 10:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved									
Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury, Dissolved	ND ug/L		0.20	0.14	1	07/12/13 09:00	07/12/13 14:29	7439-97-6	
2320B Alkalinity									
Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	ND mg/L		40.0	2.4	2		07/15/13 12:07		D3
Alkalinity, Carbonate (CaCO ₃)	ND mg/L		40.0	2.4	2		07/15/13 12:07		D3
Alkalinity, Hydroxide (CaCO ₃)	ND mg/L		40.0	2.4	2		07/15/13 12:07		D3
Alkalinity, Total as CaCO ₃	ND mg/L		40.0	2.4	2		07/15/13 12:07		D3
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0									
Bromide	ND mg/L		1.0	0.090	1		07/16/13 15:11	24959-67-9	
Chloride	1.8 mg/L		1.0	0.50	1		07/16/13 15:11	16887-00-6	
Fluoride	92.5 mg/L		10.0	2.4	50		07/16/13 15:26	16984-48-8	
Sulfate	36200 mg/L		2000	320	2000		07/17/13 11:04	14808-79-8	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148602

Sample: 517SHAFT465130709 Lab ID: 60148602005 Collected: 07/09/13 15:00 Received: 07/11/13 10:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	236	ug/L	75.0	16.6	1	07/12/13 16:15	07/16/13 12:28	7429-90-5	
Calcium	44500	ug/L	100	10.4	1	07/12/13 16:15	07/16/13 12:28	7440-70-2	
Iron	780	ug/L	50.0	11.6	1	07/12/13 16:15	07/16/13 12:28	7439-89-6	
Lithium	14.6	ug/L	10.0	2.4	1	07/12/13 16:15	07/16/13 12:28	7439-93-2	
Magnesium	10100	ug/L	50.0	6.5	1	07/12/13 16:15	07/16/13 12:28	7439-95-4	
Potassium	41900	ug/L	500	44.4	1	07/12/13 16:15	07/16/13 12:28	7440-09-7	
Silicon	2020	ug/L	500	23.9	1	07/12/13 16:15	07/16/13 12:28	7440-21-3	
Sodium	424000	ug/L	500	21.7	1	07/12/13 16:15	07/16/13 12:28	7440-23-5	
Zinc	577	ug/L	50.0	3.3	1	07/12/13 16:15	07/16/13 12:28	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	ND	ug/L	75.0	16.6	1	07/12/13 16:15	07/16/13 13:32	7429-90-5	
Calcium, Dissolved	3450	ug/L	100	10.4	1	07/12/13 16:15	07/16/13 13:32	7440-70-2	
Iron, Dissolved	19.7J	ug/L	50.0	11.6	1	07/12/13 16:15	07/16/13 13:32	7439-89-6	
Lithium, Dissolved	13.8	ug/L	10.0	2.4	1	07/12/13 16:15	07/16/13 13:32	7439-93-2	
Magnesium, Dissolved	547	ug/L	50.0	6.5	1	07/12/13 16:15	07/16/13 13:32	7439-95-4	
Potassium, Dissolved	41300	ug/L	500	44.4	1	07/12/13 16:15	07/16/13 13:32	7440-09-7	
Silicon, Dissolved	1590	ug/L	500	23.9	1	07/12/13 16:15	07/16/13 13:32	7440-21-3	
Sodium, Dissolved	418000	ug/L	500	21.7	1	07/12/13 16:15	07/16/13 13:32	7440-23-5	
Zinc, Dissolved	ND	ug/L	50.0	3.3	1	07/12/13 16:15	07/16/13 13:32	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	2.7	ug/L	1.0	0.050	1	07/12/13 16:15	07/16/13 14:13	7440-38-2	
Cadmium	2.3	ug/L	0.50	0.050	1	07/12/13 16:15	07/16/13 14:13	7440-43-9	
Chromium	4.5	ug/L	1.0	0.070	1	07/12/13 16:15	07/16/13 14:13	7440-47-3	
Cobalt	0.23J	ug/L	1.0	0.080	1	07/12/13 16:15	07/16/13 14:13	7440-48-4	
Copper	16.6	ug/L	1.0	0.12	1	07/12/13 16:15	07/16/13 14:13	7440-50-8	
Lead	130	ug/L	1.0	0.030	1	07/12/13 16:15	07/16/13 14:13	7439-92-1	
Manganese	148	ug/L	1.0	0.14	1	07/12/13 16:15	07/16/13 14:13	7439-96-5	
Nickel	0.91J	ug/L	1.0	0.070	1	07/12/13 16:15	07/16/13 14:13	7440-02-0	
Selenium	0.46J	ug/L	1.0	0.14	1	07/12/13 16:15	07/16/13 14:13	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.67J	ug/L	1.0	0.050	1	07/12/13 16:15	07/16/13 12:07	7440-38-2	
Cadmium, Dissolved	ND	ug/L	0.50	0.050	1	07/12/13 16:15	07/16/13 12:07	7440-43-9	
Chromium, Dissolved	1.0	ug/L	1.0	0.070	1	07/12/13 16:15	07/16/13 12:07	7440-47-3	
Cobalt, Dissolved	0.21J	ug/L	1.0	0.080	1	07/12/13 16:15	07/16/13 12:07	7440-48-4	
Copper, Dissolved	5.7	ug/L	1.0	0.12	1	07/12/13 16:15	07/16/13 12:07	7440-50-8	
Lead, Dissolved	10.3	ug/L	1.0	0.030	1	07/12/13 16:15	07/16/13 12:07	7439-92-1	
Manganese, Dissolved	0.96J	ug/L	1.0	0.14	1	07/12/13 16:15	07/16/13 14:30	7439-96-5	B
Nickel, Dissolved	0.16J	ug/L	1.0	0.070	1	07/12/13 16:15	07/16/13 12:07	7440-02-0	
Selenium, Dissolved	0.42J	ug/L	1.0	0.14	1	07/12/13 16:15	07/16/13 12:07	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/12/13 09:00	07/12/13 15:03	7439-97-6	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148602

Sample: 517SHAFT465130709 Lab ID: 60148602005 Collected: 07/09/13 15:00 Received: 07/11/13 10:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/12/13 09:00	07/12/13 14:32	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/15/13 12:25		
Alkalinity, Carbonate (CaCO ₃)	522	mg/L	20.0	1.2	1		07/15/13 12:25		
Alkalinity, Hydroxide (CaCO ₃)	457	mg/L	20.0	1.2	1		07/15/13 12:25		
Alkalinity, Total as CaCO ₃	978	mg/L	20.0	1.2	1		07/15/13 12:25		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	0.94J	mg/L	1.0	0.090	1		07/16/13 15:42	24959-67-9	
Chloride	1.3	mg/L	1.0	0.50	1		07/16/13 15:42	16887-00-6	
Fluoride	0.11J	mg/L	0.20	0.047	1		07/16/13 15:42	16984-48-8	
Sulfate	39.1	mg/L	5.0	0.80	5		07/17/13 12:37	14808-79-8	
Sulfate	36.8	mg/L	5.0	0.80	5		08/14/13 15:22	14808-79-8	H1

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148602

QC Batch: MERP/7499

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury

Associated Lab Samples: 60148602001, 60148602002, 60148602003, 60148602004, 60148602005

METHOD BLANK: 1218791

Matrix: Water

Associated Lab Samples: 60148602001, 60148602002, 60148602003, 60148602004, 60148602005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	07/12/13 14:34	

LABORATORY CONTROL SAMPLE: 1218792

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1218793 1218794

Parameter	Units	60148602001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.1	4.3	82	85	70-130	4	20	

MATRIX SPIKE SAMPLE: 1218795

Parameter	Units	60148602002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	ND	5	4.5	89	70-130	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148602

QC Batch:	MERP/7498	Analysis Method:	EPA 245.1
QC Batch Method:	EPA 245.1	Analysis Description:	245.1 Mercury - Dissolved
Associated Lab Samples:	60148602001, 60148602002, 60148602003, 60148602004, 60148602005		

METHOD BLANK:	1218781	Matrix:	Water
Associated Lab Samples:	60148602001, 60148602002, 60148602003, 60148602004, 60148602005		

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	07/12/13 14:07	

LABORATORY CONTROL SAMPLE: 1218782						
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	4.6	92	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1218783													1218784		
Parameter	Units	60148602001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual			
Mercury, Dissolved	ug/L	ND	5	5	5.0	5.3	101	106	70-130	5	20				

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148602

QC Batch: MPRP/23456

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60148602001, 60148602002, 60148602003, 60148602004, 60148602005

METHOD BLANK: 1219400

Matrix: Water

Associated Lab Samples: 60148602001, 60148602002, 60148602003, 60148602004, 60148602005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	07/16/13 11:59	
Calcium	ug/L	ND	100	07/16/13 11:59	
Iron	ug/L	ND	50.0	07/16/13 11:59	
Lithium	ug/L	ND	10.0	07/16/13 11:59	
Magnesium	ug/L	ND	50.0	07/16/13 11:59	
Potassium	ug/L	ND	500	07/16/13 11:59	
Silicon	ug/L	36.0J	500	07/16/13 11:59	
Sodium	ug/L	33.1J	500	07/16/13 11:59	
Zinc	ug/L	ND	50.0	07/16/13 11:59	

LABORATORY CONTROL SAMPLE: 1219401

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	10300	103	85-115	
Calcium	ug/L	10000	9980	100	85-115	
Iron	ug/L	10000	10100	101	85-115	
Lithium	ug/L	1000	998	100	85-115	
Magnesium	ug/L	10000	10300	103	85-115	
Potassium	ug/L	10000	10400	104	85-115	
Silicon	ug/L	5000	5140	103	85-115	
Sodium	ug/L	10000	10600	106	85-115	
Zinc	ug/L	1000	1010	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1219402

1219403

Parameter	Units	60148602003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	255000	10000	10000	263000	265000	76	96	70-130	1	8	
Calcium	ug/L	388000	10000	10000	392000	395000	39	71	70-130	1	9 M1	
Iron	ug/L	1640000	10000	10000	1630000	1640000	-50	85	70-130	1	10 M1	
Lithium	ug/L	302	1000	1000	1230	1260	93	95	70-130	2	20	
Magnesium	ug/L	220000	10000	10000	226000	228000	64	76	70-130	1	9 M1	
Potassium	ug/L	2690	10000	10000	12100	12500	94	98	70-130	3	7	
Silicon	ug/L	43800	5000	5000	47600	48400	76	92	70-130	2	5	
Sodium	ug/L	8720	10000	10000	18300	18600	96	98	70-130	2	8	
Zinc	ug/L	231000	1000	1000	227000	233000	-380	160	70-130	2	11 M1	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148602

QC Batch: MPRP/23454

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60148602001, 60148602002, 60148602003, 60148602004, 60148602005

METHOD BLANK: 1219390

Matrix: Water

Associated Lab Samples: 60148602001, 60148602002, 60148602003, 60148602004, 60148602005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	07/16/13 13:16	
Calcium, Dissolved	ug/L	ND	100	07/16/13 13:16	
Iron, Dissolved	ug/L	ND	50.0	07/16/13 13:16	
Lithium, Dissolved	ug/L	ND	10.0	07/16/13 13:16	
Magnesium, Dissolved	ug/L	ND	50.0	07/16/13 13:16	
Potassium, Dissolved	ug/L	ND	500	07/16/13 13:16	
Silicon, Dissolved	ug/L	ND	500	07/16/13 13:16	
Sodium, Dissolved	ug/L	ND	500	07/16/13 13:16	
Zinc, Dissolved	ug/L	ND	50.0	07/16/13 13:16	

LABORATORY CONTROL SAMPLE: 1219391

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	10100	101	85-115	
Calcium, Dissolved	ug/L	10000	9710	97	85-115	
Iron, Dissolved	ug/L	10000	9830	98	85-115	
Lithium, Dissolved	ug/L	1000	986	99	85-115	
Magnesium, Dissolved	ug/L	10000	9950	100	85-115	
Potassium, Dissolved	ug/L	10000	10200	102	85-115	
Silicon, Dissolved	ug/L	5000	4980	100	85-115	
Sodium, Dissolved	ug/L	10000	10400	104	85-115	
Zinc, Dissolved	ug/L	1000	982	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1219392

1219393

Parameter	Units	60148602003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	251000	10000	10000	260000	258000	86	66	70-130	1	8 M1	
Calcium, Dissolved	ug/L	379000	10000	10000	387000	382000	72	31	70-130	1	9 M1	
Iron, Dissolved	ug/L	1600000	10000	10000	1600000	1580000	25	-145	70-130	1	10 M1	
Lithium, Dissolved	ug/L	288	1000	1000	1230	1240	94	95	70-130	0	20	
Magnesium, Dissolved	ug/L	215000	10000	10000	222000	219000	76	44	70-130	1	9 M1	
Potassium, Dissolved	ug/L	2580	10000	10000	12000	12200	94	96	70-130	2	7	
Silicon, Dissolved	ug/L	42600	5000	5000	46800	46400	83	76	70-130	1	5	
Sodium, Dissolved	ug/L	8550	10000	10000	18100	18200	96	96	70-130	0	8	
Zinc, Dissolved	ug/L	231000	1000	1000	233000	233000	160	140	70-130	0	11 M1	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148602

QC Batch: MPRP/23455 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60148602001, 60148602002, 60148602003, 60148602004, 60148602005

METHOD BLANK: 1219395 Matrix: Water
Associated Lab Samples: 60148602001, 60148602002, 60148602003, 60148602004, 60148602005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	07/16/13 13:09	
Cadmium	ug/L	ND	0.50	07/16/13 13:09	
Chromium	ug/L	ND	1.0	07/16/13 13:09	
Cobalt	ug/L	ND	1.0	07/16/13 13:09	
Copper	ug/L	ND	1.0	07/16/13 13:09	
Lead	ug/L	0.20J	1.0	07/16/13 13:09	
Manganese	ug/L	0.19J	1.0	07/16/13 13:09	
Nickel	ug/L	ND	1.0	07/16/13 13:09	
Selenium	ug/L	ND	1.0	07/16/13 13:09	

LABORATORY CONTROL SAMPLE: 1219396

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	38.1	95	85-115	
Cadmium	ug/L	40	39.2	98	85-115	
Chromium	ug/L	40	38.8	97	85-115	
Cobalt	ug/L	40	38.8	97	85-115	
Copper	ug/L	40	38.8	97	85-115	
Lead	ug/L	40	38.0	95	85-115	
Manganese	ug/L	40	38.5	96	85-115	
Nickel	ug/L	40	38.8	97	85-115	
Selenium	ug/L	40	38.1	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1219397 1219398

Parameter	Units	60148602002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	0.28J	40	40	41.2	40.8	102	101	70-130	1	20	
Cadmium	ug/L	19.8	40	40	59.2	57.7	99	95	70-130	3	20	
Chromium	ug/L	ND	40	40	39.8	39.5	99	99	70-130	1	20	
Cobalt	ug/L	2.4	40	40	41.0	40.4	96	95	70-130	1	20	
Copper	ug/L	60.3	40	40	100	97.9	101	94	70-130	3	20	
Lead	ug/L	3.5	40	40	42.4	41.6	97	95	70-130	2	20	
Manganese	ug/L	1820	40	40	1880	1830	170	25	70-130	3	20 M1	
Nickel	ug/L	3.8	40	40	41.8	41.4	95	94	70-130	1	20	
Selenium	ug/L	ND	40	40	41.3	40.9	103	102	70-130	1	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148602

QC Batch: MPRP/23457 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60148602001, 60148602002, 60148602003, 60148602004, 60148602005

METHOD BLANK: 1219404 Matrix: Water

Associated Lab Samples: 60148602001, 60148602002, 60148602003, 60148602004, 60148602005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	07/16/13 11:29	
Cadmium, Dissolved	ug/L	ND	0.50	07/16/13 11:29	
Chromium, Dissolved	ug/L	ND	1.0	07/16/13 11:29	
Cobalt, Dissolved	ug/L	ND	1.0	07/16/13 11:29	
Copper, Dissolved	ug/L	ND	1.0	07/16/13 11:29	
Lead, Dissolved	ug/L	0.20J	1.0	07/16/13 11:29	
Manganese, Dissolved	ug/L	0.19J	1.0	07/16/13 11:29	
Nickel, Dissolved	ug/L	ND	1.0	07/16/13 11:29	
Selenium, Dissolved	ug/L	ND	1.0	07/16/13 11:29	

LABORATORY CONTROL SAMPLE: 1219405

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	39.0	98	85-115	
Cadmium, Dissolved	ug/L	40	39.5	99	85-115	
Chromium, Dissolved	ug/L	40	39.6	99	85-115	
Cobalt, Dissolved	ug/L	40	39.4	98	85-115	
Copper, Dissolved	ug/L	40	39.8	100	85-115	
Lead, Dissolved	ug/L	40	38.6	96	85-115	
Manganese, Dissolved	ug/L	40	39.6	99	85-115	
Nickel, Dissolved	ug/L	40	39.5	99	85-115	
Selenium, Dissolved	ug/L	40	39.4	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1219406 1219407

Parameter	Units	60148602002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	0.066J	40	40	40.9	41.2	102	103	70-130	1	20	
Cadmium, Dissolved	ug/L	18.6	40	40	57.6	57.9	98	98	70-130	0	20	
Chromium, Dissolved	ug/L	ND	40	40	39.3	39.5	98	99	70-130	1	20	
Cobalt, Dissolved	ug/L	3.9	40	40	42.3	42.5	96	96	70-130	1	20	
Copper, Dissolved	ug/L	4.4	40	40	42.3	43.4	95	98	70-130	2	20	
Lead, Dissolved	ug/L	0.22J	40	40	39.0	38.7	97	96	70-130	1	20	
Manganese, Dissolved	ug/L	1860	40	40	1870	1880	28	58	70-130	1	20 M1	
Nickel, Dissolved	ug/L	4.1	40	40	41.9	42.5	95	96	70-130	1	20	
Selenium, Dissolved	ug/L	ND	40	40	41.2	41.6	103	104	70-130	1	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148602

QC Batch: WET/42339 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60148602001, 60148602002, 60148602003, 60148602004, 60148602005

METHOD BLANK: 1219905 Matrix: Water

Associated Lab Samples: 60148602001, 60148602002, 60148602003, 60148602004, 60148602005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	07/15/13 11:30	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	07/15/13 11:30	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	07/15/13 11:30	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	07/15/13 11:30	

LABORATORY CONTROL SAMPLE: 1219906

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	497	99	90-110	

SAMPLE DUPLICATE: 1219909

Parameter	Units	60148571001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	303	296	3	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	303	296	3	10	

SAMPLE DUPLICATE: 1219910

Parameter	Units	60148619001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	451	449	0	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	451	449	0	10	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148602

QC Batch: WETA/25461 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60148602001, 60148602002, 60148602003, 60148602004, 60148602005

METHOD BLANK: 1220518 Matrix: Water

Associated Lab Samples: 60148602001, 60148602002, 60148602003, 60148602004, 60148602005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	07/16/13 09:01	
Chloride	mg/L	ND	1.0	07/16/13 09:01	
Fluoride	mg/L	ND	0.20	07/16/13 09:01	
Sulfate	mg/L	ND	1.0	07/16/13 09:01	

METHOD BLANK: 1221163 Matrix: Water

Associated Lab Samples: 60148602003, 60148602004, 60148602005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.0	07/17/13 09:01	

LABORATORY CONTROL SAMPLE: 1220519

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.1	103	90-110	
Chloride	mg/L	5	4.9	97	90-110	
Fluoride	mg/L	2.5	2.5	99	90-110	
Sulfate	mg/L	5	4.8	96	90-110	

LABORATORY CONTROL SAMPLE: 1221164

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	5.3	107	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1220520 1220521

Parameter	Units	60148416002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	ND	100	100	98.8	102	99	102	75-119	3	10	
Chloride	mg/L	115	100	100	210	211	95	95	64-118	0	12	
Fluoride	mg/L	ND	50	50	54.4	54.4	109	109	75-110	0	10	
Sulfate	mg/L	228	100	100	326	322	99	95	61-119	1	10	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148602

MATRIX SPIKE SAMPLE:		1220522					
Parameter	Units	60148602003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	5	8.7	175	75-119	M1
Chloride	mg/L	2.5	5	8.0	110	64-118	
Fluoride	mg/L	85.8	125	251	132	75-110	M1
Sulfate	mg/L	18500	10000	18700	2	61-119	M1

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60148602

QC Batch: WETA/25786

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60148602005

METHOD BLANK: 1235892

Matrix: Water

Associated Lab Samples: 60148602005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.0	08/14/13 10:05	

LABORATORY CONTROL SAMPLE: 1235893

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1235894 1235895

Parameter	Units	60150875001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	212	250	250	448	398	95	75	61-119	12	10	R1

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Rico-Argentine Mine Site

Pace Project No.: 60148602

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

H1 Analysis conducted outside the EPA method holding time.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

R1 RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rico-Argentine Mine Site

Pace Project No.: 60148602

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60148602001	DR3A1307090400	EPA 200.7	MPRP/23456	EPA 200.7	ICP/18446
60148602002	DR3A1307100400	EPA 200.7	MPRP/23456	EPA 200.7	ICP/18446
60148602003	BLAINEOBF130709	EPA 200.7	MPRP/23456	EPA 200.7	ICP/18446
60148602004	BLAINEIBF130709	EPA 200.7	MPRP/23456	EPA 200.7	ICP/18446
60148602005	517SHAFT465130709	EPA 200.7	MPRP/23456	EPA 200.7	ICP/18446
60148602001	DR3A1307090400	EPA 200.7	MPRP/23454	EPA 200.7	ICP/18447
60148602002	DR3A1307100400	EPA 200.7	MPRP/23454	EPA 200.7	ICP/18447
60148602003	BLAINEOBF130709	EPA 200.7	MPRP/23454	EPA 200.7	ICP/18447
60148602004	BLAINEIBF130709	EPA 200.7	MPRP/23454	EPA 200.7	ICP/18447
60148602005	517SHAFT465130709	EPA 200.7	MPRP/23454	EPA 200.7	ICP/18447
60148602001	DR3A1307090400	EPA 200.8	MPRP/23455	EPA 200.8	ICPM/2382
60148602002	DR3A1307100400	EPA 200.8	MPRP/23455	EPA 200.8	ICPM/2382
60148602003	BLAINEOBF130709	EPA 200.8	MPRP/23455	EPA 200.8	ICPM/2382
60148602004	BLAINEIBF130709	EPA 200.8	MPRP/23455	EPA 200.8	ICPM/2382
60148602005	517SHAFT465130709	EPA 200.8	MPRP/23455	EPA 200.8	ICPM/2382
60148602001	DR3A1307090400	EPA 200.8	MPRP/23457	EPA 200.8	ICPM/2383
60148602002	DR3A1307100400	EPA 200.8	MPRP/23457	EPA 200.8	ICPM/2383
60148602003	BLAINEOBF130709	EPA 200.8	MPRP/23457	EPA 200.8	ICPM/2383
60148602004	BLAINEIBF130709	EPA 200.8	MPRP/23457	EPA 200.8	ICPM/2383
60148602005	517SHAFT465130709	EPA 200.8	MPRP/23457	EPA 200.8	ICPM/2383
60148602001	DR3A1307090400	EPA 245.1	MERP/7499	EPA 245.1	MERC/7458
60148602002	DR3A1307100400	EPA 245.1	MERP/7499	EPA 245.1	MERC/7458
60148602003	BLAINEOBF130709	EPA 245.1	MERP/7499	EPA 245.1	MERC/7458
60148602004	BLAINEIBF130709	EPA 245.1	MERP/7499	EPA 245.1	MERC/7458
60148602005	517SHAFT465130709	EPA 245.1	MERP/7499	EPA 245.1	MERC/7458
60148602001	DR3A1307090400	EPA 245.1	MERP/7498	EPA 245.1	MERC/7457
60148602002	DR3A1307100400	EPA 245.1	MERP/7498	EPA 245.1	MERC/7457
60148602003	BLAINEOBF130709	EPA 245.1	MERP/7498	EPA 245.1	MERC/7457
60148602004	BLAINEIBF130709	EPA 245.1	MERP/7498	EPA 245.1	MERC/7457
60148602005	517SHAFT465130709	EPA 245.1	MERP/7498	EPA 245.1	MERC/7457
60148602001	DR3A1307090400	SM 2320B	WET/42339		
60148602002	DR3A1307100400	SM 2320B	WET/42339		
60148602003	BLAINEOBF130709	SM 2320B	WET/42339		
60148602004	BLAINEIBF130709	SM 2320B	WET/42339		
60148602005	517SHAFT465130709	SM 2320B	WET/42339		
60148602001	DR3A1307090400	EPA 300.0	WETA/25461		
60148602002	DR3A1307100400	EPA 300.0	WETA/25461		
60148602003	BLAINEOBF130709	EPA 300.0	WETA/25461		
60148602004	BLAINEIBF130709	EPA 300.0	WETA/25461		
60148602005	517SHAFT465130709	EPA 300.0	WETA/25461		
60148602005	517SHAFT465130709	EPA 300.0	WETA/25786		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt
ESI Tech Spec Client

WO#: 60148602



Client Name: BP Amec

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 1Z 733W 87 84 4820 7787 Pace Shipping Label Used? Yes ☐ No ☒

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☒ 2PLC

Thermometer Used: T-112 / T-194

Type of Ice: Wet Blue ☐ None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 0.4, 0.6

Date and initials of person examining contents: 7-11-13 GA

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses	Matrix: <u>WT</u>	13.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
		16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:

Client Notification/ Resolution:

Copy COC to Client? Y ☒ N

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [Signature]

Date: 7/11/13

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.	
Start: <u>1200</u>	Start:
End: <u>1205</u>	End:
Temp:	Temp:



Rush TAT: Yes ☒ No ☐

BP/ARC LaMP COC Rev. 6 01/01/2009

July 19, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: 2013 517 INJECTION TREATABILITY
Pace Project No.: 60148807

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on July 13, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Mary Jane Walls for
Heather Wilson
heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 2013 517 INJECTION TREATABILITY

Pace Project No.: 60148807

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 2013 517 INJECTION TREATABILITY

Pace Project No.: 60148807

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60148807001	DR3A1307110400	Water	07/11/13 04:00	07/13/13 09:10
60148807002	DR3A1307120400	Water	07/12/13 04:00	07/13/13 09:10

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 2013 517 INJECTION TREATABILITY

Pace Project No.: 60148807

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60148807001	DR3A1307110400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60148807002	DR3A1307120400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILITY
Pace Project No.: 60148807

Method: EPA 200.7
Description: 200.7 Metals, Total
Client: BP AMEC
Date: July 19, 2013

General Information:

2 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILITY

Pace Project No.: 60148807

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: July 19, 2013

General Information:

2 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23467

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60148807001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1220228)
- Calcium, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILITY
Pace Project No.: 60148807

Method: EPA 200.8
Description: 200.8 MET ICPMS
Client: BP AMEC
Date: July 19, 2013

General Information:

2 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23466

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60148807002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1220215)
- Manganese

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILITY
Pace Project No.: 60148807

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: July 19, 2013

General Information:

2 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23468

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60148807002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1220233)
- Manganese, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILITY
Pace Project No.: 60148807

Method: EPA 245.1
Description: 245.1 Mercury
Client: BP AMEC
Date: July 19, 2013

General Information:

2 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILITY

Pace Project No.: 60148807

Method: EPA 245.1

Description: 245.1 Mercury, Dissolved

Client: BP AMEC

Date: July 19, 2013

General Information:

2 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILITY

Pace Project No.: 60148807

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: July 19, 2013

General Information:

2 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILITY

Pace Project No.: 60148807

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: July 19, 2013

General Information:

2 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILITY

Pace Project No.: 60148807

Sample: DR3A1307110400 Lab ID: 60148807001 Collected: 07/11/13 04:00 Received: 07/13/13 09:10 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	452	ug/L	75.0	16.6	1	07/15/13 16:10	07/16/13 15:49	7429-90-5	
Calcium	227000	ug/L	100	10.4	1	07/15/13 16:10	07/16/13 15:49	7440-70-2	
Iron	4910	ug/L	50.0	11.6	1	07/15/13 16:10	07/16/13 15:49	7439-89-6	
Lithium	24.4	ug/L	10.0	2.4	1	07/15/13 16:10	07/16/13 15:49	7439-93-2	
Magnesium	19200	ug/L	50.0	6.5	1	07/15/13 16:10	07/16/13 15:49	7439-95-4	
Potassium	3940	ug/L	500	44.4	1	07/15/13 16:10	07/16/13 15:49	7440-09-7	
Silicon	7550	ug/L	500	23.9	1	07/15/13 16:10	07/16/13 15:49	7440-21-3	
Sodium	25500	ug/L	500	21.7	1	07/15/13 16:10	07/16/13 15:49	7440-23-5	
Zinc	3790	ug/L	50.0	3.3	1	07/15/13 16:10	07/16/13 15:49	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	46.5J	ug/L	75.0	16.6	1	07/15/13 16:10	07/16/13 16:08	7429-90-5	
Calcium, Dissolved	228000	ug/L	100	10.4	1	07/15/13 16:10	07/16/13 16:08	7440-70-2	D9,M1
Iron, Dissolved	ND	ug/L	50.0	11.6	1	07/15/13 16:10	07/16/13 16:08	7439-89-6	
Lithium, Dissolved	25.1	ug/L	10.0	2.4	1	07/15/13 16:10	07/16/13 16:08	7439-93-2	D9
Magnesium, Dissolved	19000	ug/L	50.0	6.5	1	07/15/13 16:10	07/16/13 16:08	7439-95-4	
Potassium, Dissolved	4060	ug/L	500	44.4	1	07/15/13 16:10	07/16/13 16:08	7440-09-7	D9
Silicon, Dissolved	7130	ug/L	500	23.9	1	07/15/13 16:10	07/16/13 16:08	7440-21-3	
Sodium, Dissolved	26100	ug/L	500	21.7	1	07/15/13 16:10	07/16/13 16:08	7440-23-5	D9
Zinc, Dissolved	3470	ug/L	50.0	3.3	1	07/15/13 16:10	07/16/13 16:08	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.49J	ug/L	1.0	0.050	1	07/15/13 16:10	07/17/13 13:56	7440-38-2	
Cadmium	19.8	ug/L	0.50	0.050	1	07/15/13 16:10	07/17/13 13:56	7440-43-9	
Chromium	0.14J	ug/L	1.0	0.070	1	07/15/13 16:10	07/17/13 13:56	7440-47-3	
Cobalt	2.3	ug/L	1.0	0.080	1	07/15/13 16:10	07/17/13 13:56	7440-48-4	
Copper	95.3	ug/L	1.0	0.12	1	07/15/13 16:10	07/17/13 13:56	7440-50-8	
Lead	6.0	ug/L	1.0	0.030	1	07/15/13 16:10	07/17/13 13:56	7439-92-1	
Manganese	1780	ug/L	1.0	0.14	1	07/15/13 16:10	07/17/13 13:56	7439-96-5	
Nickel	3.8	ug/L	1.0	0.070	1	07/15/13 16:10	07/17/13 13:56	7440-02-0	
Selenium	ND	ug/L	1.0	0.14	1	07/15/13 16:10	07/17/13 13:56	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	1.0	0.050	1	07/15/13 16:10	07/17/13 13:35	7440-38-2	
Cadmium, Dissolved	18.4	ug/L	0.50	0.050	1	07/15/13 16:10	07/17/13 13:35	7440-43-9	
Chromium, Dissolved	ND	ug/L	1.0	0.070	1	07/15/13 16:10	07/17/13 13:35	7440-47-3	
Cobalt, Dissolved	3.8	ug/L	1.0	0.080	1	07/15/13 16:10	07/17/13 13:35	7440-48-4	D9
Copper, Dissolved	5.8	ug/L	1.0	0.12	1	07/15/13 16:10	07/17/13 13:35	7440-50-8	
Lead, Dissolved	0.057J	ug/L	1.0	0.030	1	07/15/13 16:10	07/17/13 13:35	7439-92-1	
Manganese, Dissolved	1820	ug/L	1.0	0.14	1	07/15/13 16:10	07/17/13 13:35	7439-96-5	D9
Nickel, Dissolved	4.1	ug/L	1.0	0.070	1	07/15/13 16:10	07/17/13 13:35	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	07/15/13 16:10	07/17/13 13:35	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/16/13 08:30	07/16/13 14:20	7439-97-6	

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILITY

Pace Project No.: 60148807

Sample: DR3A1307110400		Lab ID: 60148807001		Collected: 07/11/13 04:00		Received: 07/13/13 09:10		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/16/13 08:30	07/16/13 13:58	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	87.5	mg/L	20.0	1.2	1		07/16/13 09:01		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/16/13 09:01		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/16/13 09:01		
Alkalinity, Total as CaCO ₃	87.5	mg/L	20.0	1.2	1		07/16/13 09:01		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.67J	mg/L	1.0	0.090	1		07/19/13 09:54	24959-67-9	
Chloride	0.89J	mg/L	1.0	0.50	1		07/19/13 09:54	16887-00-6	B
Fluoride	2.1	mg/L	0.20	0.047	1		07/19/13 09:54	16984-48-8	
Sulfate	665	mg/L	50.0	8.0	50		07/18/13 15:45	14808-79-8	

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILITY

Pace Project No.: 60148807

Sample: DR3A1307120400 Lab ID: 60148807002 Collected: 07/12/13 04:00 Received: 07/13/13 09:10 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	540	ug/L	75.0	16.6	1	07/15/13 16:10	07/16/13 16:01	7429-90-5	
Calcium	232000	ug/L	100	10.4	1	07/15/13 16:10	07/16/13 16:01	7440-70-2	
Iron	5730	ug/L	50.0	11.6	1	07/15/13 16:10	07/16/13 16:01	7439-89-6	
Lithium	25.0	ug/L	10.0	2.4	1	07/15/13 16:10	07/16/13 16:01	7439-93-2	
Magnesium	19500	ug/L	50.0	6.5	1	07/15/13 16:10	07/16/13 16:01	7439-95-4	
Potassium	4000	ug/L	500	44.4	1	07/15/13 16:10	07/16/13 16:01	7440-09-7	
Silicon	7860	ug/L	500	23.9	1	07/15/13 16:10	07/16/13 16:01	7440-21-3	
Sodium	25600	ug/L	500	21.7	1	07/15/13 16:10	07/16/13 16:01	7440-23-5	
Zinc	3860	ug/L	50.0	3.3	1	07/15/13 16:10	07/16/13 16:01	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	53.6J	ug/L	75.0	16.6	1	07/15/13 16:10	07/16/13 16:29	7429-90-5	
Calcium, Dissolved	234000	ug/L	100	10.4	1	07/15/13 16:10	07/16/13 16:29	7440-70-2	D9
Iron, Dissolved	ND	ug/L	50.0	11.6	1	07/15/13 16:10	07/16/13 16:29	7439-89-6	
Lithium, Dissolved	26.0	ug/L	10.0	2.4	1	07/15/13 16:10	07/16/13 16:29	7439-93-2	D9
Magnesium, Dissolved	19500	ug/L	50.0	6.5	1	07/15/13 16:10	07/16/13 16:29	7439-95-4	
Potassium, Dissolved	4080	ug/L	500	44.4	1	07/15/13 16:10	07/16/13 16:29	7440-09-7	D9
Silicon, Dissolved	7280	ug/L	500	23.9	1	07/15/13 16:10	07/16/13 16:29	7440-21-3	
Sodium, Dissolved	26200	ug/L	500	21.7	1	07/15/13 16:10	07/16/13 16:29	7440-23-5	D9
Zinc, Dissolved	3470	ug/L	50.0	3.3	1	07/15/13 16:10	07/16/13 16:29	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.62J	ug/L	1.0	0.050	1	07/15/13 16:10	07/17/13 14:00	7440-38-2	
Cadmium	20.9	ug/L	0.50	0.050	1	07/15/13 16:10	07/17/13 14:00	7440-43-9	
Chromium	0.26J	ug/L	1.0	0.070	1	07/15/13 16:10	07/17/13 14:00	7440-47-3	
Cobalt	2.4	ug/L	1.0	0.080	1	07/15/13 16:10	07/17/13 14:00	7440-48-4	
Copper	116	ug/L	1.0	0.12	1	07/15/13 16:10	07/17/13 14:00	7440-50-8	
Lead	7.6	ug/L	1.0	0.030	1	07/15/13 16:10	07/17/13 14:00	7439-92-1	
Manganese	1830	ug/L	1.0	0.14	1	07/15/13 16:10	07/17/13 14:00	7439-96-5	M1
Nickel	3.8	ug/L	1.0	0.070	1	07/15/13 16:10	07/17/13 14:00	7440-02-0	
Selenium	ND	ug/L	1.0	0.14	1	07/15/13 16:10	07/17/13 14:00	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	1.0	0.050	1	07/15/13 16:10	07/17/13 13:39	7440-38-2	
Cadmium, Dissolved	18.8	ug/L	0.50	0.050	1	07/15/13 16:10	07/17/13 13:39	7440-43-9	
Chromium, Dissolved	ND	ug/L	1.0	0.070	1	07/15/13 16:10	07/17/13 13:39	7440-47-3	
Cobalt, Dissolved	4.0	ug/L	1.0	0.080	1	07/15/13 16:10	07/17/13 13:39	7440-48-4	D9
Copper, Dissolved	6.2	ug/L	1.0	0.12	1	07/15/13 16:10	07/17/13 13:39	7440-50-8	
Lead, Dissolved	ND	ug/L	1.0	0.030	1	07/15/13 16:10	07/17/13 13:39	7439-92-1	
Manganese, Dissolved	1850	ug/L	1.0	0.14	1	07/15/13 16:10	07/17/13 13:39	7439-96-5	D9,M1
Nickel, Dissolved	4.3	ug/L	1.0	0.070	1	07/15/13 16:10	07/17/13 13:39	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	07/15/13 16:10	07/17/13 13:39	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/16/13 08:30	07/16/13 14:33	7439-97-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILITY

Pace Project No.: 60148807

Sample: DR3A1307120400		Lab ID: 60148807002		Collected: 07/12/13 04:00		Received: 07/13/13 09:10		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/16/13 08:30	07/16/13 14:04	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	89.0	mg/L	20.0	1.2	1		07/16/13 09:05		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/16/13 09:05		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/16/13 09:05		
Alkalinity, Total as CaCO ₃	89.0	mg/L	20.0	1.2	1		07/16/13 09:05		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.67J	mg/L	1.0	0.090	1		07/19/13 10:11	24959-67-9	
Chloride	0.88J	mg/L	1.0	0.50	1		07/19/13 10:11	16887-00-6	B
Fluoride	2.1	mg/L	0.20	0.047	1		07/19/13 10:11	16984-48-8	
Sulfate	641	mg/L	50.0	8.0	50		07/18/13 16:34	14808-79-8	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILITY

Pace Project No.: 60148807

QC Batch: MERP/7512 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60148807001, 60148807002

METHOD BLANK: 1220507 Matrix: Water

Associated Lab Samples: 60148807001, 60148807002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	07/16/13 14:15	

LABORATORY CONTROL SAMPLE: 1220508

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.3	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1220509 1220510

Parameter	Units	60148807001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.2	4.0	84	78	70-130	7	20	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILITY

Pace Project No.: 60148807

QC Batch:	MERP/7511	Analysis Method:	EPA 245.1
QC Batch Method:	EPA 245.1	Analysis Description:	245.1 Mercury - Dissolved
Associated Lab Samples:	60148807001, 60148807002		

METHOD BLANK: 1220503 Matrix: Water

Associated Lab Samples: 60148807001, 60148807002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	07/16/13 13:51	

LABORATORY CONTROL SAMPLE: 1220504

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	5.3	105	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1220505 1220506

Parameter	Units	60148807001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury, Dissolved	ug/L	ND	5	5	3.9	4.4	77	86	70-130	11	20	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILITY
Pace Project No.: 60148807

QC Batch: MPRP/23465 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60148807001, 60148807002

METHOD BLANK: 1220205 Matrix: Water
Associated Lab Samples: 60148807001, 60148807002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	07/16/13 15:43	
Calcium	ug/L	ND	100	07/16/13 15:43	
Iron	ug/L	ND	50.0	07/16/13 15:43	
Lithium	ug/L	ND	10.0	07/16/13 15:43	
Magnesium	ug/L	ND	50.0	07/16/13 15:43	
Potassium	ug/L	ND	500	07/16/13 15:43	
Silicon	ug/L	ND	500	07/16/13 15:43	
Sodium	ug/L	ND	500	07/16/13 15:43	
Zinc	ug/L	ND	50.0	07/16/13 15:43	

LABORATORY CONTROL SAMPLE: 1220206

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	10000	100	85-115	
Calcium	ug/L	10000	9680	97	85-115	
Iron	ug/L	10000	9620	96	85-115	
Lithium	ug/L	1000	982	98	85-115	
Magnesium	ug/L	10000	9860	99	85-115	
Potassium	ug/L	10000	10200	102	85-115	
Silicon	ug/L	5000	4810	96	85-115	
Sodium	ug/L	10000	10400	104	85-115	
Zinc	ug/L	1000	964	96	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1220207 1220208

Parameter	Units	60148807001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	452	10000	10000	10500	10800	100	104	70-130	3	8	
Calcium	ug/L	227000	10000	10000	234000	238000	70	105	70-130	1	9	
Iron	ug/L	4910	10000	10000	14200	14600	93	97	70-130	3	10	
Lithium	ug/L	24.4	1000	1000	1040	1090	102	106	70-130	4	20	
Magnesium	ug/L	19200	10000	10000	28200	28500	90	92	70-130	1	9	
Potassium	ug/L	3940	10000	10000	14400	14900	105	110	70-130	3	7	
Silicon	ug/L	7550	5000	5000	12200	12500	94	99	70-130	2	5	
Sodium	ug/L	25500	10000	10000	35800	36500	103	111	70-130	2	8	
Zinc	ug/L	3790	1000	1000	4640	4650	85	86	70-130	0	11	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILITY
Pace Project No.: 60148807

QC Batch: MPRP/23467 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Dissolved
Associated Lab Samples: 60148807001, 60148807002

METHOD BLANK: 1220226 Matrix: Water
Associated Lab Samples: 60148807001, 60148807002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	07/16/13 16:20	
Calcium, Dissolved	ug/L	ND	100	07/16/13 16:20	
Iron, Dissolved	ug/L	ND	50.0	07/16/13 16:20	
Lithium, Dissolved	ug/L	ND	10.0	07/16/13 16:20	
Magnesium, Dissolved	ug/L	ND	50.0	07/16/13 16:20	
Potassium, Dissolved	ug/L	ND	500	07/16/13 16:20	
Silicon, Dissolved	ug/L	24.5J	500	07/16/13 16:20	
Sodium, Dissolved	ug/L	ND	500	07/16/13 16:20	
Zinc, Dissolved	ug/L	ND	50.0	07/16/13 16:20	

LABORATORY CONTROL SAMPLE: 1220227

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	10300	103	85-115	
Calcium, Dissolved	ug/L	10000	9760	98	85-115	
Iron, Dissolved	ug/L	10000	9780	98	85-115	
Lithium, Dissolved	ug/L	1000	1020	102	85-115	
Magnesium, Dissolved	ug/L	10000	9930	99	85-115	
Potassium, Dissolved	ug/L	10000	10500	105	85-115	
Silicon, Dissolved	ug/L	5000	4880	98	85-115	
Sodium, Dissolved	ug/L	10000	10700	107	85-115	
Zinc, Dissolved	ug/L	1000	974	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1220228 1220229

Parameter	Units	60148807001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	46.5J	10000	10000	10300	10000	102	100	70-130	2	8	
Calcium, Dissolved	ug/L	228000	10000	10000	232000	237000	35	84	70-130	2	9 M1	
Iron, Dissolved	ug/L	ND	10000	10000	9460	9170	95	92	70-130	3	10	
Lithium, Dissolved	ug/L	25.1	1000	1000	1090	1070	107	104	70-130	2	20	
Magnesium, Dissolved	ug/L	19000	10000	10000	28000	27900	90	89	70-130	0	9	
Potassium, Dissolved	ug/L	4060	10000	10000	14800	14600	108	105	70-130	1	7	
Silicon, Dissolved	ug/L	7130	5000	5000	11800	11700	93	92	70-130	0	5	
Sodium, Dissolved	ug/L	26100	10000	10000	36500	37000	104	109	70-130	1	8	
Zinc, Dissolved	ug/L	3470	1000	1000	4210	4280	74	81	70-130	2	11	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILITY
Pace Project No.: 60148807

QC Batch: MPRP/23466 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60148807001, 60148807002

METHOD BLANK: 1220212 Matrix: Water
Associated Lab Samples: 60148807001, 60148807002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	07/17/13 14:16	
Cadmium	ug/L	ND	0.50	07/17/13 14:16	
Chromium	ug/L	ND	1.0	07/17/13 14:16	
Cobalt	ug/L	ND	1.0	07/17/13 14:16	
Copper	ug/L	ND	1.0	07/17/13 14:16	
Lead	ug/L	ND	1.0	07/17/13 14:16	
Manganese	ug/L	0.23J	1.0	07/17/13 14:16	
Nickel	ug/L	ND	1.0	07/17/13 14:16	
Selenium	ug/L	ND	1.0	07/17/13 14:16	

LABORATORY CONTROL SAMPLE: 1220213

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	38.1	95	85-115	
Cadmium	ug/L	40	38.7	97	85-115	
Chromium	ug/L	40	39.3	98	85-115	
Cobalt	ug/L	40	38.3	96	85-115	
Copper	ug/L	40	38.5	96	85-115	
Lead	ug/L	40	39.0	98	85-115	
Manganese	ug/L	40	39.2	98	85-115	
Nickel	ug/L	40	37.8	95	85-115	
Selenium	ug/L	40	38.0	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1220214 1220215

Parameter	Units	60148807002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	0.62J	40	40	39.6	39.8	97	98	70-130	1	20	
Cadmium	ug/L	20.9	40	40	58.8	58.5	95	94	70-130	1	20	
Chromium	ug/L	0.26J	40	40	38.7	38.6	96	96	70-130	0	20	
Cobalt	ug/L	2.4	40	40	39.5	39.7	93	93	70-130	0	20	
Copper	ug/L	116	40	40	151	150	88	85	70-130	1	20	
Lead	ug/L	7.6	40	40	46.7	46.6	98	98	70-130	0	20	
Manganese	ug/L	1830	40	40	1870	1830	110	-5	70-130	2	20 M1	
Nickel	ug/L	3.8	40	40	40.6	40.6	92	92	70-130	0	20	
Selenium	ug/L	ND	40	40	38.5	37.5	96	93	70-130	3	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILITY
Pace Project No.: 60148807

QC Batch: MPRP/23468 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60148807001, 60148807002

METHOD BLANK: 1220231 Matrix: Water
Associated Lab Samples: 60148807001, 60148807002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	07/17/13 13:27	
Cadmium, Dissolved	ug/L	ND	0.50	07/17/13 13:27	
Chromium, Dissolved	ug/L	ND	1.0	07/17/13 13:27	
Cobalt, Dissolved	ug/L	ND	1.0	07/17/13 13:27	
Copper, Dissolved	ug/L	ND	1.0	07/17/13 13:27	
Lead, Dissolved	ug/L	ND	1.0	07/17/13 13:27	
Manganese, Dissolved	ug/L	ND	1.0	07/17/13 13:27	
Nickel, Dissolved	ug/L	ND	1.0	07/17/13 13:27	
Selenium, Dissolved	ug/L	ND	1.0	07/17/13 13:27	

LABORATORY CONTROL SAMPLE: 1220232

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	38.4	96	85-115	
Cadmium, Dissolved	ug/L	40	38.9	97	85-115	
Chromium, Dissolved	ug/L	40	39.9	100	85-115	
Cobalt, Dissolved	ug/L	40	38.7	97	85-115	
Copper, Dissolved	ug/L	40	39.8	100	85-115	
Lead, Dissolved	ug/L	40	39.2	98	85-115	
Manganese, Dissolved	ug/L	40	39.2	98	85-115	
Nickel, Dissolved	ug/L	40	38.5	96	85-115	
Selenium, Dissolved	ug/L	40	38.3	96	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1220233 1220234

Parameter	Units	60148807002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	ND	40	40	39.7	39.6	99	99	70-130	0	20	
Cadmium, Dissolved	ug/L	18.8	40	40	57.2	57.4	96	96	70-130	0	20	
Chromium, Dissolved	ug/L	ND	40	40	39.1	39.5	98	99	70-130	1	20	
Cobalt, Dissolved	ug/L	4.0	40	40	42.1	42.1	95	95	70-130	0	20	
Copper, Dissolved	ug/L	6.2	40	40	43.6	43.5	93	93	70-130	0	20	
Lead, Dissolved	ug/L	ND	40	40	39.1	39.0	98	98	70-130	0	20	
Manganese, Dissolved	ug/L	1850	40	40	1850	1880	2	82	70-130	2	20 M1	
Nickel, Dissolved	ug/L	4.3	40	40	41.5	41.7	93	93	70-130	1	20	
Selenium, Dissolved	ug/L	ND	40	40	38.8	39.3	97	98	70-130	1	20	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILITY

Pace Project No.: 60148807

QC Batch:	WET/42363	Analysis Method:	SM 2320B
QC Batch Method:	SM 2320B	Analysis Description:	2320B Alkalinity
Associated Lab Samples:	60148807001, 60148807002		

METHOD BLANK: 1220398 Matrix: Water

Associated Lab Samples: 60148807001, 60148807002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	07/16/13 08:56	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	07/16/13 08:56	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	07/16/13 08:56	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	07/16/13 08:56	

LABORATORY CONTROL SAMPLE: 1220399

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	493	99	90-110	

SAMPLE DUPLICATE: 1220402

Parameter	Units	60148807002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	89.0	87.0	2	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	89.0	87.0	2	10	

SAMPLE DUPLICATE: 1220403

Parameter	Units	60148547001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	129	136	6	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	129	136	6	10	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILITY
Pace Project No.: 60148807

QC Batch: WETA/25500 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60148807001, 60148807002

METHOD BLANK: 1221765 Matrix: Water
Associated Lab Samples: 60148807001, 60148807002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.0	07/18/13 09:05	

METHOD BLANK: 1222652 Matrix: Water
Associated Lab Samples: 60148807001, 60148807002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	07/19/13 09:05	
Chloride	mg/L	ND	1.0	07/19/13 09:05	
Fluoride	mg/L	ND	0.20	07/19/13 09:05	

LABORATORY CONTROL SAMPLE: 1221766

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	5.0	99	90-110	

LABORATORY CONTROL SAMPLE: 1222653

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.0	100	90-110	
Chloride	mg/L	5	4.9	99	90-110	
Fluoride	mg/L	2.5	2.5	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1221767 1221768

Parameter	Units	60148689002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Bromide	mg/L	ND	50	50	52.7	49.4	105	99	75-119	6	10
Chloride	mg/L	382	250	250	579	566	79	74	64-118	2	12
Fluoride	mg/L	ND	25	25	25.9	23.6	99	89	75-110	9	10
Sulfate	mg/L	155	50	50	203	200	96	90	61-119	2	10

MATRIX SPIKE SAMPLE: 1221769

Parameter	Units	60148807002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	0.67J	5	5.2	91	75-119	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILITY

Pace Project No.: 60148807

MATRIX SPIKE SAMPLE:		1221769					
Parameter	Units	60148807002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	0.88J	5	5.4	89	64-118	
Fluoride	mg/L	2.1	2.5	4.6	102	75-110	
Sulfate	mg/L	641	250	858	87	61-119	

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QUALIFIERS

Project: 2013 517 INJECTION TREATABILITY

Pace Project No.: 60148807

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 2013 517 INJECTION TREATABILITY

Pace Project No.: 60148807

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60148807001	DR3A1307110400	EPA 200.7	MPRP/23465	EPA 200.7	ICP/18454
60148807002	DR3A1307120400	EPA 200.7	MPRP/23465	EPA 200.7	ICP/18454
60148807001	DR3A1307110400	EPA 200.7	MPRP/23467	EPA 200.7	ICP/18453
60148807002	DR3A1307120400	EPA 200.7	MPRP/23467	EPA 200.7	ICP/18453
60148807001	DR3A1307110400	EPA 200.8	MPRP/23466	EPA 200.8	ICPM/2385
60148807002	DR3A1307120400	EPA 200.8	MPRP/23466	EPA 200.8	ICPM/2385
60148807001	DR3A1307110400	EPA 200.8	MPRP/23468	EPA 200.8	ICPM/2384
60148807002	DR3A1307120400	EPA 200.8	MPRP/23468	EPA 200.8	ICPM/2384
60148807001	DR3A1307110400	EPA 245.1	MERP/7512	EPA 245.1	MERC/7469
60148807002	DR3A1307120400	EPA 245.1	MERP/7512	EPA 245.1	MERC/7469
60148807001	DR3A1307110400	EPA 245.1	MERP/7511	EPA 245.1	MERC/7468
60148807002	DR3A1307120400	EPA 245.1	MERP/7511	EPA 245.1	MERC/7468
60148807001	DR3A1307110400	SM 2320B	WET/42363		
60148807002	DR3A1307120400	SM 2320B	WET/42363		
60148807001	DR3A1307110400	EPA 300.0	WETA/25500		
60148807002	DR3A1307120400	EPA 300.0	WETA/25500		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt
ESI Tech Spec Client

WO#: 60148807



Client Name: BP Amec

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 12133W872210055959 Pace Shipping Label Used? Yes ☒ No ☐

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☒ 2pc

Thermometer Used: T-112 / T-194

Type of Ice: Wet Blue ☐ None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 0-8

Date and initials of person examining contents: 7/13/13 AS

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses	Matrix: <u>wt</u>	13.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:

Client Notification/ Resolution:

Copy COC to Client? Y / N

Field Data Required? Y / N

Person Contacted: _____

Date/Time: _____

Comments/ Resolution: _____

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: 1041 Start:

End: 1050 End:

Temp: Temp:

Project Manager Review: _____

ARB for Hmw

Date: 7/15/13

Laboratory Management Program LaMP Chain of Custody Record

Page 1 of 1

BP/ARC Project Name: Rico-Argentine Mine Site

Req Due Date (mm/dd/yy): _____

Rush TAT: Yes X No _____

BP/ARC Facility No: _____

Lab Work Order Number: 00148807

Lab Name: Pace Analytical Laboratories, Inc.	BP/ARC Facility Address: Rico-Argentine Mine	Consultant/Contractor: AMEC E&I, Inc.
Lab Address: 9608 Lolret Blvd., Lenexa, KS 66219	City, State, ZIP Code: Rico, Colorado	Consultant/Contractor Project No: SA11161313.300H
Lab PM: Heather Wilson	Lead Regulatory Agency: U.S. EPA Region 8	Address: 10670 White Rock Road, Suite 100, Rancho Cordova, CA
Lab Phone: (913) 563-1407	California Global ID No.: NA	Consultant/Contractor PM: Marc Lombardi
Lab Shipping Acct: UPS # 733W87	Enfos Proposal No: D00LL-0010 WR 266494	Phone: 916-636-3200
Lab Bottle Order No: NA	Accounting Mode: Provision <u>X</u> OOC-BU _____ OOC-RM _____	Email Report/EDD To: lynda.lombardi@amec.com
Other Info: 2013 517 Injection Treatability Study	Stage: 4-Execute Activity: Spend	Invoice To: BP/ARC <u>X</u> Contractor _____

BP/ARC EBM: Anthony Brown				Matrix		No. Containers / Preservative							Requested Analyses										Report Type & QC Level			
EBM Phone: 714-228-6770				Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Methanol	Tot Metals-see notes (E200.7/200.8/E245.1)	Dis Metals-see notes (E200.7/200.8/E245.1)	Alkalinity-Total, HCO ₃ , CO ₃ , OH (SM2820B)	Bromide (E300.0)	Chloride (E300.0)	Fluoride (E300.0)	Sulfate (E300.0)	Standard <u>X</u>	Full Data Package _____	
EBM Email: anthony.brown@bp.com																								Comments		
	DR3A1307110400	7/11/13	400		X			3	1		2	13p2u	X	X	X	X	X	X	X	X	X	X	13p2u	15	15	Dissolved metals samples are field filtered
	DR3A1307120400	7/12/13	400		X			3	1		2	↓	X	X	X	X	X	X	X	X	X	X	↓	↓	↓	(u2
<div>4u 7/12/13</div>																										
																									Metals are: Al, Ca, Fe, K, Li, Na, Mg,Si,	
																									Zn (E200.7); As, Cd, Co, Cr, Cu, Mn, Ni,	
																									Pb, Se (E200.8); and Hg (E245.1)	
RUSH 5-day TAT																										

Sampler's Name: <u>Kylah Wyatt</u>	Relinquished By / Affiliation: <u>Kylah Wyatt / AMEC</u>	Date: <u>7/12/13</u>	Time: <u>1500</u>	Accepted By / Affiliation: <u>E. Brackett / Pace</u>	Date: <u>7/13</u>	Time: <u>0910</u>
Sampler's Company: <u>AMEC</u>						
Shipment Method: <u>UPS</u>	Ship Date: <u>7/12/13</u>					
Shipment Tracking No: <u>1Z733W8722 10055959</u>						

Special Instructions: _____

July 23, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: 2013 517 INJECTION TREATABILIT
Pace Project No.: 60148886

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on July 16, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148886

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148886

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60148886001	DR3A1307130400	Water	07/13/13 04:00	07/16/13 10:20
60148886002	DR3A1307140400	Water	07/14/13 04:00	07/16/13 10:20
60148886003	DR3A1307150400	Water	07/15/13 04:00	07/16/13 10:20

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SAMPLE ANALYTE COUNT

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148886

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60148886001	DR3A1307130400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60148886002	DR3A1307140400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60148886003	DR3A1307150400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148886

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: July 23, 2013

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23503

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60148886001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1221349)

- Calcium

- Zinc

R1: RPD value was outside control limits.

- MSD (Lab ID: 1221350)

- Silicon

Additional Comments:

Analyte Comments:

QC Batch: MPRP/23503

1e: Post Digestion Spike Performed - 121% Recovery

- DR3A1307130400 (Lab ID: 60148886001)

- Zinc

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148886

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: July 23, 2013

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23500

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60148886001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1221331)
- Calcium, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148886

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: July 23, 2013

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23502

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60148886002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1221344)
- Manganese

Additional Comments:

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT
Pace Project No.: 60148886

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: July 23, 2013

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23501

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60148886002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1221335)
 - Manganese, Dissolved
- MSD (Lab ID: 1221336)
 - Manganese, Dissolved

Additional Comments:

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148886

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: July 23, 2013

General Information:

3 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148886

Method: EPA 245.1

Description: 245.1 Mercury, Dissolved

Client: BP AMEC

Date: July 23, 2013

General Information:

3 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148886

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: July 23, 2013

General Information:

3 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148886

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: July 23, 2013

General Information:

3 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148886

Sample: DR3A1307130400			Lab ID: 60148886001		Collected: 07/13/13 04:00		Received: 07/16/13 10:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual	
200.7 Metals, Total			Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum	615	ug/L	75.0	16.6	1	07/17/13 11:45	07/22/13 11:29	7429-90-5	M1	
Calcium	213000	ug/L	100	10.4	1	07/17/13 11:45	07/22/13 11:29	7440-70-2		
Iron	6280	ug/L	50.0	11.6	1	07/17/13 11:45	07/22/13 11:29	7439-89-6		
Lithium	24.0	ug/L	10.0	2.4	1	07/17/13 11:45	07/22/13 11:29	7439-93-2		
Magnesium	17900	ug/L	50.0	6.5	1	07/17/13 11:45	07/22/13 11:29	7439-95-4		
Potassium	3900	ug/L	500	44.4	1	07/17/13 11:45	07/22/13 11:29	7440-09-7	R1	
Silicon	7420	ug/L	500	23.9	1	07/17/13 11:45	07/22/13 11:29	7440-21-3		
Sodium	23200	ug/L	500	21.7	1	07/17/13 11:45	07/22/13 11:29	7440-23-5		
Zinc	3530	ug/L	50.0	3.3	1	07/17/13 11:45	07/22/13 11:29	7440-66-6	1e,M1	
200.7 Metals, Dissolved			Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	49.4J	ug/L	75.0	16.6	1	07/17/13 11:45	07/22/13 12:00	7429-90-5	D9,M1	
Calcium, Dissolved	215000	ug/L	100	10.4	1	07/17/13 11:45	07/22/13 12:00	7440-70-2		
Iron, Dissolved	ND	ug/L	50.0	11.6	1	07/17/13 11:45	07/22/13 12:00	7439-89-6	D9	
Lithium, Dissolved	25.0	ug/L	10.0	2.4	1	07/17/13 11:45	07/22/13 12:00	7439-93-2		
Magnesium, Dissolved	17900	ug/L	50.0	6.5	1	07/17/13 11:45	07/22/13 12:00	7439-95-4	D9	
Potassium, Dissolved	3890	ug/L	500	44.4	1	07/17/13 11:45	07/22/13 12:00	7440-09-7		
Silicon, Dissolved	6760	ug/L	500	23.9	1	07/17/13 11:45	07/22/13 12:00	7440-21-3		
Sodium, Dissolved	23300	ug/L	500	21.7	1	07/17/13 11:45	07/22/13 12:00	7440-23-5		
Zinc, Dissolved	3060	ug/L	50.0	3.3	1	07/17/13 11:45	07/22/13 12:00	7440-66-6		
200.8 MET ICPMS			Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Arsenic	0.81J	ug/L	1.0	0.050	1	07/17/13 11:45	07/18/13 16:32	7440-38-2		
Cadmium	20.5	ug/L	0.50	0.050	1	07/17/13 11:45	07/18/13 16:32	7440-43-9		
Chromium	0.65J	ug/L	1.0	0.070	1	07/17/13 11:45	07/18/13 16:32	7440-47-3		
Cobalt	2.4	ug/L	1.0	0.080	1	07/17/13 11:45	07/18/13 16:32	7440-48-4		
Copper	136	ug/L	1.0	0.12	1	07/17/13 11:45	07/18/13 16:32	7440-50-8		
Lead	9.5	ug/L	1.0	0.030	1	07/17/13 11:45	07/18/13 16:32	7439-92-1		
Manganese	1800	ug/L	1.0	0.14	1	07/17/13 11:45	07/18/13 16:32	7439-96-5		
Nickel	4.0	ug/L	1.0	0.070	1	07/17/13 11:45	07/18/13 16:32	7440-02-0		
Selenium	ND	ug/L	1.0	0.14	1	07/17/13 11:45	07/18/13 16:32	7782-49-2		
200.8 MET ICPMS, Dissolved			Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Arsenic, Dissolved	0.050J	ug/L	1.0	0.050	1	07/17/13 11:45	07/18/13 15:30	7440-38-2	D9	
Cadmium, Dissolved	17.4	ug/L	0.50	0.050	1	07/17/13 11:45	07/18/13 15:30	7440-43-9		
Chromium, Dissolved	0.18J	ug/L	1.0	0.070	1	07/17/13 11:45	07/18/13 15:30	7440-47-3		
Cobalt, Dissolved	4.1	ug/L	1.0	0.080	1	07/17/13 11:45	07/18/13 15:30	7440-48-4		
Copper, Dissolved	5.4	ug/L	1.0	0.12	1	07/17/13 11:45	07/18/13 15:30	7440-50-8		
Lead, Dissolved	ND	ug/L	1.0	0.030	1	07/17/13 11:45	07/18/13 15:30	7439-92-1	D9	
Manganese, Dissolved	1840	ug/L	1.0	0.14	1	07/17/13 11:45	07/18/13 15:30	7439-96-5		
Nickel, Dissolved	4.1	ug/L	1.0	0.070	1	07/17/13 11:45	07/18/13 15:30	7440-02-0	D9	
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	07/17/13 11:45	07/18/13 15:30	7782-49-2		
245.1 Mercury			Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	ND	ug/L	0.20	0.14	1	07/17/13 08:00	07/17/13 11:46	7439-97-6		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148886

Sample: DR3A1307130400		Lab ID: 60148886001		Collected: 07/13/13 04:00		Received: 07/16/13 10:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/17/13 08:00	07/17/13 11:30	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	84.4	mg/L	20.0	1.2	1		07/17/13 10:18		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/17/13 10:18		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/17/13 10:18		
Alkalinity, Total as CaCO ₃	84.4	mg/L	20.0	1.2	1		07/17/13 10:18		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.090	1		07/18/13 21:14	24959-67-9	
Chloride	0.73J	mg/L	1.0	0.50	1		07/18/13 21:14	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.047	1		07/18/13 21:14	16984-48-8	
Sulfate	752	mg/L	50.0	8.0	50		07/18/13 21:29	14808-79-8	

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148886

Sample: DR3A1307140400 Lab ID: 60148886002 Collected: 07/14/13 04:00 Received: 07/16/13 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	675	ug/L	75.0	16.6	1	07/17/13 11:45	07/22/13 11:41	7429-90-5	
Calcium	215000	ug/L	100	10.4	1	07/17/13 11:45	07/22/13 11:41	7440-70-2	
Iron	6670	ug/L	50.0	11.6	1	07/17/13 11:45	07/22/13 11:41	7439-89-6	
Lithium	25.4	ug/L	10.0	2.4	1	07/17/13 11:45	07/22/13 11:41	7439-93-2	
Magnesium	17800	ug/L	50.0	6.5	1	07/17/13 11:45	07/22/13 11:41	7439-95-4	
Potassium	4000	ug/L	500	44.4	1	07/17/13 11:45	07/22/13 11:41	7440-09-7	
Silicon	7550	ug/L	500	23.9	1	07/17/13 11:45	07/22/13 11:41	7440-21-3	
Sodium	23400	ug/L	500	21.7	1	07/17/13 11:45	07/22/13 11:41	7440-23-5	
Zinc	3570	ug/L	50.0	3.3	1	07/17/13 11:45	07/22/13 11:41	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	58.7J	ug/L	75.0	16.6	1	07/17/13 11:45	07/22/13 12:13	7429-90-5	
Calcium, Dissolved	215000	ug/L	100	10.4	1	07/17/13 11:45	07/22/13 12:13	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	11.6	1	07/17/13 11:45	07/22/13 12:13	7439-89-6	
Lithium, Dissolved	25.1	ug/L	10.0	2.4	1	07/17/13 11:45	07/22/13 12:13	7439-93-2	
Magnesium, Dissolved	17800	ug/L	50.0	6.5	1	07/17/13 11:45	07/22/13 12:13	7439-95-4	
Potassium, Dissolved	3890	ug/L	500	44.4	1	07/17/13 11:45	07/22/13 12:13	7440-09-7	
Silicon, Dissolved	6810	ug/L	500	23.9	1	07/17/13 11:45	07/22/13 12:13	7440-21-3	
Sodium, Dissolved	23000	ug/L	500	21.7	1	07/17/13 11:45	07/22/13 12:13	7440-23-5	
Zinc, Dissolved	3170	ug/L	50.0	3.3	1	07/17/13 11:45	07/22/13 12:13	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.91J	ug/L	1.0	0.050	1	07/17/13 11:45	07/18/13 16:36	7440-38-2	
Cadmium	20.4	ug/L	0.50	0.050	1	07/17/13 11:45	07/18/13 16:36	7440-43-9	
Chromium	0.76J	ug/L	1.0	0.070	1	07/17/13 11:45	07/18/13 16:36	7440-47-3	
Cobalt	2.4	ug/L	1.0	0.080	1	07/17/13 11:45	07/18/13 16:36	7440-48-4	
Copper	150	ug/L	1.0	0.12	1	07/17/13 11:45	07/18/13 16:36	7440-50-8	
Lead	10.6	ug/L	1.0	0.030	1	07/17/13 11:45	07/18/13 16:36	7439-92-1	
Manganese	1820	ug/L	1.0	0.14	1	07/17/13 11:45	07/18/13 16:36	7439-96-5	M1
Nickel	3.9	ug/L	1.0	0.070	1	07/17/13 11:45	07/18/13 16:36	7440-02-0	
Selenium	ND	ug/L	1.0	0.14	1	07/17/13 11:45	07/18/13 16:36	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	1.0	0.050	1	07/17/13 11:45	07/18/13 15:34	7440-38-2	
Cadmium, Dissolved	17.7	ug/L	0.50	0.050	1	07/17/13 11:45	07/18/13 15:34	7440-43-9	
Chromium, Dissolved	0.14J	ug/L	1.0	0.070	1	07/17/13 11:45	07/18/13 15:34	7440-47-3	
Cobalt, Dissolved	3.8	ug/L	1.0	0.080	1	07/17/13 11:45	07/18/13 15:34	7440-48-4	D9
Copper, Dissolved	7.6	ug/L	1.0	0.12	1	07/17/13 11:45	07/18/13 15:34	7440-50-8	
Lead, Dissolved	0.095J	ug/L	1.0	0.030	1	07/17/13 11:45	07/18/13 15:34	7439-92-1	
Manganese, Dissolved	1800	ug/L	1.0	0.14	1	07/17/13 11:45	07/18/13 15:34	7439-96-5	M1
Nickel, Dissolved	4.3	ug/L	1.0	0.070	1	07/17/13 11:45	07/18/13 15:34	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	07/17/13 11:45	07/18/13 15:34	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/17/13 08:00	07/17/13 11:59	7439-97-6	

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148886

Sample: DR3A1307140400		Lab ID: 60148886002		Collected: 07/14/13 04:00		Received: 07/16/13 10:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/17/13 08:00	07/17/13 11:37	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	90.6	mg/L	20.0	1.2	1		07/17/13 10:32		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/17/13 10:32		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/17/13 10:32		
Alkalinity, Total as CaCO ₃	90.6	mg/L	20.0	1.2	1		07/17/13 10:32		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.090	1		07/18/13 21:45	24959-67-9	
Chloride	0.63J	mg/L	1.0	0.50	1		07/18/13 21:45	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.047	1		07/18/13 21:45	16984-48-8	
Sulfate	771	mg/L	50.0	8.0	50		07/18/13 22:00	14808-79-8	

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148886

Sample: DR3A1307150400 Lab ID: 60148886003 Collected: 07/15/13 04:00 Received: 07/16/13 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	592	ug/L	75.0	16.6	1	07/17/13 11:45	07/22/13 11:45	7429-90-5	
Calcium	215000	ug/L	100	10.4	1	07/17/13 11:45	07/22/13 11:45	7440-70-2	
Iron	6160	ug/L	50.0	11.6	1	07/17/13 11:45	07/22/13 11:45	7439-89-6	
Lithium	24.9	ug/L	10.0	2.4	1	07/17/13 11:45	07/22/13 11:45	7439-93-2	
Magnesium	17800	ug/L	50.0	6.5	1	07/17/13 11:45	07/22/13 11:45	7439-95-4	
Potassium	3850	ug/L	500	44.4	1	07/17/13 11:45	07/22/13 11:45	7440-09-7	
Silicon	7410	ug/L	500	23.9	1	07/17/13 11:45	07/22/13 11:45	7440-21-3	
Sodium	23200	ug/L	500	21.7	1	07/17/13 11:45	07/22/13 11:45	7440-23-5	
Zinc	3500	ug/L	50.0	3.3	1	07/17/13 11:45	07/22/13 11:45	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	52.2J	ug/L	75.0	16.6	1	07/17/13 11:45	07/22/13 12:17	7429-90-5	
Calcium, Dissolved	221000	ug/L	100	10.4	1	07/17/13 11:45	07/22/13 12:17	7440-70-2	D9
Iron, Dissolved	ND	ug/L	50.0	11.6	1	07/17/13 11:45	07/22/13 12:17	7439-89-6	
Lithium, Dissolved	26.2	ug/L	10.0	2.4	1	07/17/13 11:45	07/22/13 12:17	7439-93-2	D9
Magnesium, Dissolved	18400	ug/L	50.0	6.5	1	07/17/13 11:45	07/22/13 12:17	7439-95-4	D9
Potassium, Dissolved	3920	ug/L	500	44.4	1	07/17/13 11:45	07/22/13 12:17	7440-09-7	D9
Silicon, Dissolved	6880	ug/L	500	23.9	1	07/17/13 11:45	07/22/13 12:17	7440-21-3	
Sodium, Dissolved	23500	ug/L	500	21.7	1	07/17/13 11:45	07/22/13 12:17	7440-23-5	D9
Zinc, Dissolved	2990	ug/L	50.0	3.3	1	07/17/13 11:45	07/22/13 12:17	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.80J	ug/L	1.0	0.050	1	07/17/13 11:45	07/18/13 16:53	7440-38-2	
Cadmium	20.1	ug/L	0.50	0.050	1	07/17/13 11:45	07/18/13 16:53	7440-43-9	
Chromium	0.27J	ug/L	1.0	0.070	1	07/17/13 11:45	07/18/13 16:53	7440-47-3	
Cobalt	2.4	ug/L	1.0	0.080	1	07/17/13 11:45	07/18/13 16:53	7440-48-4	
Copper	131	ug/L	1.0	0.12	1	07/17/13 11:45	07/18/13 16:53	7440-50-8	
Lead	8.9	ug/L	1.0	0.030	1	07/17/13 11:45	07/18/13 16:53	7439-92-1	
Manganese	1810	ug/L	1.0	0.14	1	07/17/13 11:45	07/18/13 16:53	7439-96-5	
Nickel	3.9	ug/L	1.0	0.070	1	07/17/13 11:45	07/18/13 16:53	7440-02-0	
Selenium	ND	ug/L	1.0	0.14	1	07/17/13 11:45	07/18/13 16:53	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	1.0	0.050	1	07/17/13 11:45	07/18/13 15:51	7440-38-2	
Cadmium, Dissolved	16.6	ug/L	0.50	0.050	1	07/17/13 11:45	07/18/13 15:51	7440-43-9	
Chromium, Dissolved	ND	ug/L	1.0	0.070	1	07/17/13 11:45	07/18/13 15:51	7440-47-3	
Cobalt, Dissolved	4.3	ug/L	1.0	0.080	1	07/17/13 11:45	07/18/13 15:51	7440-48-4	D9
Copper, Dissolved	4.7	ug/L	1.0	0.12	1	07/17/13 11:45	07/18/13 15:51	7440-50-8	
Lead, Dissolved	0.032J	ug/L	1.0	0.030	1	07/17/13 11:45	07/18/13 15:51	7439-92-1	
Manganese, Dissolved	1820	ug/L	1.0	0.14	1	07/17/13 11:45	07/18/13 15:51	7439-96-5	D9
Nickel, Dissolved	4.4	ug/L	1.0	0.070	1	07/17/13 11:45	07/18/13 15:51	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	07/17/13 11:45	07/18/13 15:51	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/17/13 08:00	07/17/13 12:01	7439-97-6	

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148886

Sample: DR3A1307150400		Lab ID: 60148886003		Collected: 07/15/13 04:00		Received: 07/16/13 10:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/17/13 08:00	07/17/13 11:39	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	92.6	mg/L	20.0	1.2	1		07/17/13 10:35		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/17/13 10:35		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/17/13 10:35		
Alkalinity, Total as CaCO ₃	92.6	mg/L	20.0	1.2	1		07/17/13 10:35		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.090	1		07/18/13 22:15	24959-67-9	
Chloride	0.61J	mg/L	1.0	0.50	1		07/18/13 22:15	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.047	1		07/18/13 22:15	16984-48-8	
Sulfate	811	mg/L	50.0	8.0	50		07/18/13 22:31	14808-79-8	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148886

QC Batch: MERP/7517 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60148886001, 60148886002, 60148886003

METHOD BLANK: 1221068 Matrix: Water

Associated Lab Samples: 60148886001, 60148886002, 60148886003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	07/17/13 11:41	

LABORATORY CONTROL SAMPLE: 1221069

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.4	109	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1221070 1221071

Parameter	Units	60148886001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	5.0	4.9	100	99	70-130	1	20	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148886

QC Batch: MERP/7516 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury - Dissolved
Associated Lab Samples: 60148886001, 60148886002, 60148886003

METHOD BLANK: 1221064 Matrix: Water

Associated Lab Samples: 60148886001, 60148886002, 60148886003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	07/17/13 11:18	

LABORATORY CONTROL SAMPLE: 1221065

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	5.3	107	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1221066 1221067

Parameter	Units	60148886001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury, Dissolved	ug/L	ND	5	5	5.8	5.0	115	100	70-130	14	20	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148886

QC Batch: MPRP/23503 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60148886001, 60148886002, 60148886003

METHOD BLANK: 1221347 Matrix: Water

Associated Lab Samples: 60148886001, 60148886002, 60148886003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	07/22/13 12:26	
Calcium	ug/L	ND	100	07/22/13 12:26	
Iron	ug/L	ND	50.0	07/22/13 12:26	
Lithium	ug/L	ND	10.0	07/22/13 12:26	
Magnesium	ug/L	ND	50.0	07/22/13 12:26	
Potassium	ug/L	ND	500	07/22/13 12:26	
Silicon	ug/L	ND	500	07/22/13 12:26	
Sodium	ug/L	ND	500	07/22/13 12:26	
Zinc	ug/L	ND	50.0	07/22/13 12:26	

LABORATORY CONTROL SAMPLE: 1221348

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	10200	102	85-115	
Calcium	ug/L	10000	9230	92	85-115	
Iron	ug/L	10000	9860	99	85-115	
Lithium	ug/L	1000	980	98	85-115	
Magnesium	ug/L	10000	9160	92	85-115	
Potassium	ug/L	10000	10200	102	85-115	
Silicon	ug/L	5000	4610	92	85-115	
Sodium	ug/L	10000	10200	102	85-115	
Zinc	ug/L	1000	905	90	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1221349 1221350

Parameter	Units	60148886001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	615	10000	10000	10400	10800	98	101	70-130	4	8	
Calcium	ug/L	213000	10000	10000	208000	226000	-48	129	70-130	8	9 M1	
Iron	ug/L	6280	10000	10000	15300	16000	90	97	70-130	5	10	
Lithium	ug/L	24.0	1000	1000	1000	1040	98	101	70-130	4	20	
Magnesium	ug/L	17900	10000	10000	25000	26700	72	88	70-130	6	9	
Potassium	ug/L	3900	10000	10000	13800	14500	99	106	70-130	5	7	
Silicon	ug/L	7420	5000	5000	11400	12200	80	95	70-130	6	5 R1	
Sodium	ug/L	23200	10000	10000	31500	33600	83	105	70-130	7	8	
Zinc	ug/L	3530	1000	1000	4090	4380	56	85	70-130	7	11 M1	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148886

QC Batch:	MPRP/23500	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Dissolved
Associated Lab Samples:	60148886001, 60148886002, 60148886003		

METHOD BLANK: 1221329 Matrix: Water

Associated Lab Samples: 60148886001, 60148886002, 60148886003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	07/22/13 11:51	
Calcium, Dissolved	ug/L	ND	100	07/22/13 11:51	
Iron, Dissolved	ug/L	ND	50.0	07/22/13 11:51	
Lithium, Dissolved	ug/L	ND	10.0	07/22/13 11:51	
Magnesium, Dissolved	ug/L	ND	50.0	07/22/13 11:51	
Potassium, Dissolved	ug/L	ND	500	07/22/13 11:51	
Silicon, Dissolved	ug/L	ND	500	07/22/13 11:51	
Sodium, Dissolved	ug/L	131J	500	07/22/13 11:51	
Zinc, Dissolved	ug/L	ND	50.0	07/22/13 11:51	

LABORATORY CONTROL SAMPLE: 1221330

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	10200	102	85-115	
Calcium, Dissolved	ug/L	10000	9220	92	85-115	
Iron, Dissolved	ug/L	10000	9810	98	85-115	
Lithium, Dissolved	ug/L	1000	987	99	85-115	
Magnesium, Dissolved	ug/L	10000	9020	90	85-115	
Potassium, Dissolved	ug/L	10000	10200	102	85-115	
Silicon, Dissolved	ug/L	5000	4590	92	85-115	
Sodium, Dissolved	ug/L	10000	10000	100	85-115	
Zinc, Dissolved	ug/L	1000	899	90	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1221331 1221332

Parameter	Units	60148886001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	49.4J	10000	10000	10200	10200	101	101	70-130	0	8	
Calcium, Dissolved	ug/L	215000	10000	10000	222000	223000	67	75	70-130	0	9 M1	
Iron, Dissolved	ug/L	ND	10000	10000	9660	9630	97	96	70-130	0	10	
Lithium, Dissolved	ug/L	25.0	1000	1000	1040	1040	102	102	70-130	0	20	
Magnesium, Dissolved	ug/L	17900	10000	10000	26200	26900	83	90	70-130	3	9	
Potassium, Dissolved	ug/L	3890	10000	10000	14400	14300	105	105	70-130	0	7	
Silicon, Dissolved	ug/L	6760	5000	5000	11300	11400	91	92	70-130	0	5	
Sodium, Dissolved	ug/L	23300	10000	10000	33000	33200	97	99	70-130	1	8	
Zinc, Dissolved	ug/L	3060	1000	1000	3800	3880	74	82	70-130	2	11	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148886

QC Batch: MPRP/23502 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60148886001, 60148886002, 60148886003

METHOD BLANK: 1221342 Matrix: Water

Associated Lab Samples: 60148886001, 60148886002, 60148886003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	07/18/13 16:24	
Cadmium	ug/L	ND	0.50	07/18/13 16:24	
Chromium	ug/L	ND	1.0	07/18/13 16:24	
Cobalt	ug/L	ND	1.0	07/18/13 16:24	
Copper	ug/L	ND	1.0	07/18/13 16:24	
Lead	ug/L	ND	1.0	07/18/13 16:24	
Manganese	ug/L	ND	1.0	07/18/13 16:24	
Nickel	ug/L	ND	1.0	07/18/13 16:24	
Selenium	ug/L	ND	1.0	07/18/13 16:24	

LABORATORY CONTROL SAMPLE: 1221343

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	38.7	97	85-115	
Cadmium	ug/L	40	39.0	98	85-115	
Chromium	ug/L	40	39.0	98	85-115	
Cobalt	ug/L	40	38.7	97	85-115	
Copper	ug/L	40	39.1	98	85-115	
Lead	ug/L	40	38.8	97	85-115	
Manganese	ug/L	40	38.8	97	85-115	
Nickel	ug/L	40	38.3	96	85-115	
Selenium	ug/L	40	37.9	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1221344 1221345

Parameter	Units	60148886002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	0.91J	40	40	42.0	40.7	103	100	70-130	3	20	
Cadmium	ug/L	20.4	40	40	59.5	58.7	98	96	70-130	1	20	
Chromium	ug/L	0.76J	40	40	40.7	39.6	100	97	70-130	3	20	
Cobalt	ug/L	2.4	40	40	41.5	40.4	98	95	70-130	3	20	
Copper	ug/L	150	40	40	192	188	104	94	70-130	2	20	
Lead	ug/L	10.6	40	40	50.7	49.6	100	98	70-130	2	20	
Manganese	ug/L	1820	40	40	1890	1870	175	118	70-130	1	20 M1	
Nickel	ug/L	3.9	40	40	42.8	41.5	97	94	70-130	3	20	
Selenium	ug/L	ND	40	40	39.8	37.3	99	93	70-130	6	20	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148886

QC Batch: MPRP/23501 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60148886001, 60148886002, 60148886003

METHOD BLANK: 1221333 Matrix: Water

Associated Lab Samples: 60148886001, 60148886002, 60148886003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	07/18/13 15:22	
Cadmium, Dissolved	ug/L	ND	0.50	07/18/13 15:22	
Chromium, Dissolved	ug/L	ND	1.0	07/18/13 15:22	
Cobalt, Dissolved	ug/L	ND	1.0	07/18/13 15:22	
Copper, Dissolved	ug/L	ND	1.0	07/18/13 15:22	
Lead, Dissolved	ug/L	ND	1.0	07/18/13 15:22	
Manganese, Dissolved	ug/L	0.23J	1.0	07/18/13 15:22	
Nickel, Dissolved	ug/L	ND	1.0	07/18/13 15:22	
Selenium, Dissolved	ug/L	ND	1.0	07/18/13 15:22	

LABORATORY CONTROL SAMPLE: 1221334

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	38.8	97	85-115	
Cadmium, Dissolved	ug/L	40	38.8	97	85-115	
Chromium, Dissolved	ug/L	40	40.2	100	85-115	
Cobalt, Dissolved	ug/L	40	39.3	98	85-115	
Copper, Dissolved	ug/L	40	39.6	99	85-115	
Lead, Dissolved	ug/L	40	38.9	97	85-115	
Manganese, Dissolved	ug/L	40	39.8	99	85-115	
Nickel, Dissolved	ug/L	40	38.8	97	85-115	
Selenium, Dissolved	ug/L	40	39.0	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1221335 1221336

Parameter	Units	60148886002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	ND	40	40	39.2	38.8	98	97	70-130	1	20	
Cadmium, Dissolved	ug/L	17.7	40	40	54.5	55.0	92	93	70-130	1	20	
Chromium, Dissolved	ug/L	0.14J	40	40	37.9	37.8	94	94	70-130	0	20	
Cobalt, Dissolved	ug/L	3.8	40	40	41.0	40.8	93	93	70-130	0	20	
Copper, Dissolved	ug/L	7.6	40	40	43.8	43.4	90	90	70-130	1	20	
Lead, Dissolved	ug/L	0.095J	40	40	38.0	38.0	95	95	70-130	0	20	
Manganese, Dissolved	ug/L	1800	40	40	1810	1800	28	10	70-130	0	20 M1	
Nickel, Dissolved	ug/L	4.3	40	40	40.7	40.4	91	90	70-130	1	20	
Selenium, Dissolved	ug/L	ND	40	40	38.2	38.5	95	96	70-130	1	20	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148886

QC Batch: WET/42387 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60148886001, 60148886002, 60148886003

METHOD BLANK: 1220969 Matrix: Water

Associated Lab Samples: 60148886001, 60148886002, 60148886003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	07/17/13 09:33	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	07/17/13 09:33	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	07/17/13 09:33	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	07/17/13 09:33	

LABORATORY CONTROL SAMPLE: 1220970

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	496	99	90-110	

SAMPLE DUPLICATE: 1220973

Parameter	Units	60148857002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	230	248	7	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	230	248	7	10	

SAMPLE DUPLICATE: 1220974

Parameter	Units	60148886003 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	92.6	92.2	0	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	92.6	92.2	0	10	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148886

QC Batch: WETA/25507 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60148886001, 60148886002, 60148886003

METHOD BLANK: 1222002 Matrix: Water

Associated Lab Samples: 60148886001, 60148886002, 60148886003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	07/18/13 15:50	
Chloride	mg/L	ND	1.0	07/18/13 15:50	
Fluoride	mg/L	ND	0.20	07/18/13 15:50	
Sulfate	mg/L	ND	1.0	07/18/13 15:50	

LABORATORY CONTROL SAMPLE: 1222003

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.1	103	90-110	
Chloride	mg/L	5	5.0	99	90-110	
Fluoride	mg/L	2.5	2.7	107	90-110	
Sulfate	mg/L	5	5.3	107	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1222004 1222005

Parameter	Units	60148540001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Bromide	mg/L	ND	250	250	247	252	99	101	75-119	2	10
Chloride	mg/L	ND	250	250	259	259	92	92	64-118	0	12
Fluoride	mg/L	ND	125	125	130	132	104	105	75-110	1	10
Sulfate	mg/L	226	250	250	509	503	113	111	61-119	1	10

MATRIX SPIKE SAMPLE: 1222006

Parameter	Units	60148547002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	2500	2440	98	75-119	
Chloride	mg/L	ND	2500	2540	91	64-118	
Fluoride	mg/L	ND	1250	1260	101	75-110	
Sulfate	mg/L	2190	2500	4840	106	61-119	

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148886

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

1e Post Digestion Spike Performed - 121% Recovery

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

R1 RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60148886

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60148886001	DR3A1307130400	EPA 200.7	MPRP/23503	EPA 200.7	ICP/18469
60148886002	DR3A1307140400	EPA 200.7	MPRP/23503	EPA 200.7	ICP/18469
60148886003	DR3A1307150400	EPA 200.7	MPRP/23503	EPA 200.7	ICP/18469
60148886001	DR3A1307130400	EPA 200.7	MPRP/23500	EPA 200.7	ICP/18470
60148886002	DR3A1307140400	EPA 200.7	MPRP/23500	EPA 200.7	ICP/18470
60148886003	DR3A1307150400	EPA 200.7	MPRP/23500	EPA 200.7	ICP/18470
60148886001	DR3A1307130400	EPA 200.8	MPRP/23502	EPA 200.8	ICPM/2391
60148886002	DR3A1307140400	EPA 200.8	MPRP/23502	EPA 200.8	ICPM/2391
60148886003	DR3A1307150400	EPA 200.8	MPRP/23502	EPA 200.8	ICPM/2391
60148886001	DR3A1307130400	EPA 200.8	MPRP/23501	EPA 200.8	ICPM/2392
60148886002	DR3A1307140400	EPA 200.8	MPRP/23501	EPA 200.8	ICPM/2392
60148886003	DR3A1307150400	EPA 200.8	MPRP/23501	EPA 200.8	ICPM/2392
60148886001	DR3A1307130400	EPA 245.1	MERP/7517	EPA 245.1	MERC/7474
60148886002	DR3A1307140400	EPA 245.1	MERP/7517	EPA 245.1	MERC/7474
60148886003	DR3A1307150400	EPA 245.1	MERP/7517	EPA 245.1	MERC/7474
60148886001	DR3A1307130400	EPA 245.1	MERP/7516	EPA 245.1	MERC/7473
60148886002	DR3A1307140400	EPA 245.1	MERP/7516	EPA 245.1	MERC/7473
60148886003	DR3A1307150400	EPA 245.1	MERP/7516	EPA 245.1	MERC/7473
60148886001	DR3A1307130400	SM 2320B	WET/42387		
60148886002	DR3A1307140400	SM 2320B	WET/42387		
60148886003	DR3A1307150400	SM 2320B	WET/42387		
60148886001	DR3A1307130400	EPA 300.0	WETA/25507		
60148886002	DR3A1307140400	EPA 300.0	WETA/25507		
60148886003	DR3A1307150400	EPA 300.0	WETA/25507		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt
ESI Tech Spec Client

WO#: 60148886



Client Name: BR AMEC

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 1Z733W878448045738 Pace Shipping Label Used? Yes ☐ No ☐

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☒ Other ☐

Thermometer Used: T112 / T-194

Type of Ice: Wet Blue None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 3.6

Date and initials of person examining contents: 7/16

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses	Matrix: <u>MT</u>	13.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:

Client Notification/ Resolution:

Copy COC to Client? Y / N

Field Data Required? Y / N

Person Contacted: _____

Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [Signature]

Date: 7/16/13

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.	
Start: <u>1030</u>	Start:
End: <u>1037</u>	End:
Temp:	Temp:

Laboratory Management Program LaMP Chain of Custody Record

Page 1 of 1

BP/ARC Project Name: Rico-Argentine Mine Site

Req Due Date (mm/dd/yy): _____

Rush TAT: Yes ☒ No ☐

BP/ARC Facility No: _____

Lab Work Order Number: 60148886

Lab Name: Pace Analytical Laboratories, Inc.				BP/ARC Facility Address: Rico-Argentine Mine				Consultant/Contractor: AMEC E&I, Inc.			
Lab Address: 9608 Lolret Blvd., Lenexa, KS 66219				City, State, ZIP Code: Rico, Colorado				Consultant/Contractor Project No: SA11161313.300H			
Lab PM: Heather Wilson				Lead Regulatory Agency: U.S. EPA Region 8				Address: 10670 White Rock Road, Suite 100, Rancho Cordova, CA			
Lab Phone: (913) 563-1407				California Global ID No.: NA				Consultant/Contractor PM: Marc Lombardi			
Lab Shipping Acct: UPS # 733W87				Enfos Proposal No: D00LL-0010 WR 266494				Phone: 916-636-3200			
Lab Bottle Order No: NA				Accounting Mode: Provision <input checked="" type="checkbox"/> OOC-BU <input type="checkbox"/> OOC-RM <input type="checkbox"/>				Email Report/EDD To: lynda.lombardi@amec.com			
Other Info: 2013 517 Injection Treatability Study				Stage: 4-Execute Activity: Spend				Invoice To: BP/ARC <input checked="" type="checkbox"/> Contractor <input type="checkbox"/>			

BP/ARC EBM: Anthony Brown				Matrix		No. Containers / Preservative		Requested Analyses										Report Type & QC Level				
EBM Phone: 714-228-6770																		Standard <input checked="" type="checkbox"/>				
EBM Email: anthony.brown@bp.com																		Full Data Package <input type="checkbox"/>				
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Methanol	Tot Metals-see notes (E200.7/200.8/E245.1)	Dis Metals-see notes (E200.7/200.8/E245.1)	Alkalinity-Tot/HCO ₃ , CO ₃ , OH (SM2320B)	Bromide (E300.0)	Chloride (E300.0)	Fluoride (E300.0)	Sulfate (E300.0)	Comments		
	DR3A1307130400	7/13/13	400	X			3	1		2			X	X	X	X	X	X	X	X	603r 45 603F 1.5	Dissolved metals samples are field filtered
	DR3A1307140400	7/14/13	400	X			3	1		2			X	X	X	X	X	X	X			
	DR3A1307150400	7/15/13	400	X			3	1		2			X	X	X	X	X	X	X			
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> 7/15/13 </div>																						
Metals are: Al, Ca, Fe, K, Li, Na, Mg, Si, Zn (E200.7); As, Cd, Co, Cr, Cu, Mn, Ni, Pb, Se (E200.8); and Hg (E245.1)																						
RUSH 5-day TAT																						

Sampler's Name: <u>Kyrah Wyatt</u>		Relinquished By / Affiliation: <u>[Signature]</u>		Date: <u>7/15/13</u>	Time: <u>1500</u>	Accepted By / Affiliation: <u>[Signature]</u>		Date: <u>7/16/13</u>	Time: <u>1020</u>
Sampler's Company: <u>AMEC</u>									
Shipment Method: <u>UPS</u>		Ship Date: <u>7/15/13</u>							
Shipment Tracking No: <u>1Z733W87844804588</u>									
Special Instructions:									

THIS LINE - LAB USE ONLY: Custody Seals In Place: ☒ No ☐ Temp Blank: ☒ No ☐ Cooler Temp on Receipt: 3.6 °F ☒ Trip Blank: Yes ☒ No ☐ MS/MSD Sample Submitted: Yes ☒ No ☐

July 25, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: RICO-ARGENTINE MINE SITE
Pace Project No.: 60149083

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on July 18, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60149083

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60149083

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60149083001	DR3A1307160400	Water	07/16/13 04:00	07/18/13 10:25
60149083002	DR3A1307170400	Water	07/17/13 04:00	07/18/13 10:25

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SAMPLE ANALYTE COUNT

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60149083

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60149083001	DR3A1307160400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60149083002	DR3A1307170400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60149083

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: July 25, 2013

General Information:

2 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60149083

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: July 25, 2013

General Information:

2 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23559

B: Analyte was detected in the associated method blank.

- BLANK for HBN 299667 [MPRP/235 (Lab ID: 1223875)]
- Lithium, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23559

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60149083001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1223878)
- Calcium, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60149083

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: July 25, 2013

General Information:

2 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23562

B: Analyte was detected in the associated method blank.

- BLANK for HBN 299670 [MPRP/235 (Lab ID: 1223887)]
 - Chromium
 - Selenium

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23562

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60149083002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1223889)
 - Manganese
- MSD (Lab ID: 1223890)
 - Manganese

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60149083

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: July 25, 2013

General Information:

2 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23560

B: Analyte was detected in the associated method blank.

- BLANK for HBN 299668 [MPRP/235 (Lab ID: 1223879)
 - Chromium, Dissolved
 - Lead, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23560

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60149083002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1223881)
 - Manganese, Dissolved
- MSD (Lab ID: 1223882)
 - Manganese, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60149083

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: July 25, 2013

General Information:

2 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60149083

Method: EPA 245.1

Description: 245.1 Mercury, Dissolved

Client: BP AMEC

Date: July 25, 2013

General Information:

2 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60149083

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: July 25, 2013

General Information:

2 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

QC Batch: WET/42483

D6: The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.

- DUP (Lab ID: 1223805)
- Alkalinity, Bicarbonate (CaCO₃)

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60149083

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: July 25, 2013

General Information:

2 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60149083

Sample: DR3A1307160400 Lab ID: 60149083001 Collected: 07/16/13 04:00 Received: 07/18/13 10:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	711	ug/L	75.0	16.6	1	07/22/13 16:25	07/23/13 15:03	7429-90-5	
Calcium	238000	ug/L	100	10.4	1	07/22/13 16:25	07/23/13 15:03	7440-70-2	
Iron	7210	ug/L	50.0	11.6	1	07/22/13 16:25	07/23/13 15:03	7439-89-6	
Lithium	26.1	ug/L	10.0	2.4	1	07/22/13 16:25	07/24/13 11:05	7439-93-2	
Magnesium	19200	ug/L	50.0	6.5	1	07/22/13 16:25	07/23/13 15:03	7439-95-4	
Potassium	3720	ug/L	500	44.4	1	07/22/13 16:25	07/23/13 15:03	7440-09-7	
Silicon	8180	ug/L	500	23.9	1	07/22/13 16:25	07/23/13 15:03	7440-21-3	
Sodium	22100	ug/L	500	21.7	1	07/22/13 16:25	07/23/13 15:03	7440-23-5	
Zinc	3810	ug/L	50.0	3.3	1	07/22/13 16:25	07/23/13 15:03	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	42.6J	ug/L	75.0	16.6	1	07/22/13 16:25	07/23/13 15:37	7429-90-5	
Calcium, Dissolved	238000	ug/L	100	10.4	1	07/22/13 16:25	07/23/13 15:37	7440-70-2	M1
Iron, Dissolved	ND	ug/L	50.0	11.6	1	07/22/13 16:25	07/23/13 15:37	7439-89-6	
Lithium, Dissolved	27.3	ug/L	10.0	2.4	1	07/22/13 16:25	07/24/13 11:39	7439-93-2	B,D9
Magnesium, Dissolved	19000	ug/L	50.0	6.5	1	07/22/13 16:25	07/23/13 15:37	7439-95-4	
Potassium, Dissolved	3750	ug/L	500	44.4	1	07/22/13 16:25	07/23/13 15:37	7440-09-7	D9
Silicon, Dissolved	7510	ug/L	500	23.9	1	07/22/13 16:25	07/23/13 15:37	7440-21-3	
Sodium, Dissolved	22500	ug/L	500	21.7	1	07/22/13 16:25	07/23/13 15:37	7440-23-5	D9
Zinc, Dissolved	3490	ug/L	50.0	3.3	1	07/22/13 16:25	07/23/13 15:37	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.1	ug/L	1.0	0.050	1	07/22/13 16:25	07/23/13 16:05	7440-38-2	
Cadmium	21.0	ug/L	0.50	0.050	1	07/22/13 16:25	07/23/13 16:05	7440-43-9	
Chromium	0.49J	ug/L	1.0	0.070	1	07/22/13 16:25	07/23/13 16:05	7440-47-3	B
Cobalt	2.5	ug/L	1.0	0.080	1	07/22/13 16:25	07/23/13 16:05	7440-48-4	
Copper	154	ug/L	1.0	0.12	1	07/22/13 16:25	07/23/13 16:05	7440-50-8	
Lead	12.0	ug/L	1.0	0.030	1	07/22/13 16:25	07/23/13 16:05	7439-92-1	
Manganese	1830	ug/L	1.0	0.14	1	07/22/13 16:25	07/23/13 16:05	7439-96-5	
Nickel	4.1	ug/L	1.0	0.070	1	07/22/13 16:25	07/23/13 16:05	7440-02-0	
Selenium	0.25J	ug/L	1.0	0.14	1	07/22/13 16:25	07/23/13 16:05	7782-49-2	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.051J	ug/L	1.0	0.050	1	07/22/13 16:25	07/23/13 14:47	7440-38-2	
Cadmium, Dissolved	18.9	ug/L	0.50	0.050	1	07/22/13 16:25	07/23/13 14:47	7440-43-9	
Chromium, Dissolved	0.11J	ug/L	1.0	0.070	1	07/22/13 16:25	07/23/13 14:47	7440-47-3	B
Cobalt, Dissolved	4.3	ug/L	1.0	0.080	1	07/22/13 16:25	07/23/13 14:47	7440-48-4	D9
Copper, Dissolved	8.5	ug/L	1.0	0.12	1	07/22/13 16:25	07/23/13 14:47	7440-50-8	
Lead, Dissolved	0.16J	ug/L	1.0	0.030	1	07/22/13 16:25	07/23/13 14:47	7439-92-1	B
Manganese, Dissolved	1840	ug/L	1.0	0.14	1	07/22/13 16:25	07/23/13 14:47	7439-96-5	D9
Nickel, Dissolved	4.4	ug/L	1.0	0.070	1	07/22/13 16:25	07/23/13 14:47	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	07/22/13 16:25	07/23/13 14:47	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/22/13 09:15	07/22/13 13:04	7439-97-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60149083

Sample: DR3A1307160400 Lab ID: 60149083001 Collected: 07/16/13 04:00 Received: 07/18/13 10:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/22/13 09:15	07/22/13 12:41	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	115	mg/L	20.0	1.2	1		07/22/13 14:39		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/22/13 14:39		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/22/13 14:39		
Alkalinity, Total as CaCO ₃	115	mg/L	20.0	1.2	1		07/22/13 14:39		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	ND	mg/L	1.0	0.090	1		07/23/13 18:45	24959-67-9	
Chloride	1.0	mg/L	1.0	0.50	1		07/23/13 18:45	16887-00-6	
Fluoride	2.5	mg/L	0.20	0.047	1		07/23/13 18:45	16984-48-8	
Sulfate	672	mg/L	50.0	8.0	50		07/23/13 19:03	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60149083

Sample: DR3A1307170400 Lab ID: 60149083002 Collected: 07/17/13 04:00 Received: 07/18/13 10:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	738	ug/L	75.0	16.6	1	07/22/13 16:25	07/23/13 15:15	7429-90-5	
Calcium	234000	ug/L	100	10.4	1	07/22/13 16:25	07/23/13 15:15	7440-70-2	
Iron	7180	ug/L	50.0	11.6	1	07/22/13 16:25	07/23/13 15:15	7439-89-6	
Lithium	29.7	ug/L	10.0	2.4	1	07/22/13 16:25	07/24/13 11:17	7439-93-2	
Magnesium	18900	ug/L	50.0	6.5	1	07/22/13 16:25	07/23/13 15:15	7439-95-4	
Potassium	3780	ug/L	500	44.4	1	07/22/13 16:25	07/23/13 15:15	7440-09-7	
Silicon	8060	ug/L	500	23.9	1	07/22/13 16:25	07/23/13 15:15	7440-21-3	
Sodium	22000	ug/L	500	21.7	1	07/22/13 16:25	07/23/13 15:15	7440-23-5	
Zinc	3770	ug/L	50.0	3.3	1	07/22/13 16:25	07/23/13 15:15	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	52.9J	ug/L	75.0	16.6	1	07/22/13 16:25	07/23/13 15:50	7429-90-5	
Calcium, Dissolved	239000	ug/L	100	10.4	1	07/22/13 16:25	07/23/13 15:50	7440-70-2	D9
Iron, Dissolved	ND	ug/L	50.0	11.6	1	07/22/13 16:25	07/23/13 15:50	7439-89-6	
Lithium, Dissolved	27.0	ug/L	10.0	2.4	1	07/22/13 16:25	07/24/13 11:52	7439-93-2	B
Magnesium, Dissolved	19100	ug/L	50.0	6.5	1	07/22/13 16:25	07/23/13 15:50	7439-95-4	D9
Potassium, Dissolved	3810	ug/L	500	44.4	1	07/22/13 16:25	07/23/13 15:50	7440-09-7	D9
Silicon, Dissolved	7500	ug/L	500	23.9	1	07/22/13 16:25	07/23/13 15:50	7440-21-3	
Sodium, Dissolved	22600	ug/L	500	21.7	1	07/22/13 16:25	07/23/13 15:50	7440-23-5	D9
Zinc, Dissolved	3510	ug/L	50.0	3.3	1	07/22/13 16:25	07/23/13 15:50	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.1	ug/L	1.0	0.050	1	07/22/13 16:25	07/23/13 16:09	7440-38-2	
Cadmium	22.1	ug/L	0.50	0.050	1	07/22/13 16:25	07/23/13 16:09	7440-43-9	
Chromium	0.74J	ug/L	1.0	0.070	1	07/22/13 16:25	07/23/13 16:09	7440-47-3	B
Cobalt	2.5	ug/L	1.0	0.080	1	07/22/13 16:25	07/23/13 16:09	7440-48-4	
Copper	162	ug/L	1.0	0.12	1	07/22/13 16:25	07/23/13 16:09	7440-50-8	
Lead	12.5	ug/L	1.0	0.030	1	07/22/13 16:25	07/23/13 16:09	7439-92-1	
Manganese	1870	ug/L	1.0	0.14	1	07/22/13 16:25	07/23/13 16:09	7439-96-5	M1
Nickel	3.9	ug/L	1.0	0.070	1	07/22/13 16:25	07/23/13 16:09	7440-02-0	
Selenium	0.24J	ug/L	1.0	0.14	1	07/22/13 16:25	07/23/13 16:09	7782-49-2	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	1.0	0.050	1	07/22/13 16:25	07/23/13 14:51	7440-38-2	
Cadmium, Dissolved	18.9	ug/L	0.50	0.050	1	07/22/13 16:25	07/23/13 14:51	7440-43-9	
Chromium, Dissolved	0.41J	ug/L	1.0	0.070	1	07/22/13 16:25	07/23/13 14:51	7440-47-3	B
Cobalt, Dissolved	4.4	ug/L	1.0	0.080	1	07/22/13 16:25	07/23/13 14:51	7440-48-4	D9
Copper, Dissolved	9.7	ug/L	1.0	0.12	1	07/22/13 16:25	07/23/13 14:51	7440-50-8	
Lead, Dissolved	0.17J	ug/L	1.0	0.030	1	07/22/13 16:25	07/23/13 14:51	7439-92-1	B
Manganese, Dissolved	1830	ug/L	1.0	0.14	1	07/22/13 16:25	07/23/13 14:51	7439-96-5	M1
Nickel, Dissolved	4.4	ug/L	1.0	0.070	1	07/22/13 16:25	07/23/13 14:51	7440-02-0	D9
Selenium, Dissolved	0.22J	ug/L	1.0	0.14	1	07/22/13 16:25	07/23/13 14:51	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/22/13 09:15	07/22/13 13:10	7439-97-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60149083

Sample: DR3A1307170400 Lab ID: 60149083002 Collected: 07/17/13 04:00 Received: 07/18/13 10:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/22/13 09:15	07/22/13 12:48	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	96.8	mg/L	20.0	1.2	1		07/22/13 13:02		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/22/13 13:02		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/22/13 13:02		
Alkalinity, Total as CaCO ₃	96.8	mg/L	20.0	1.2	1		07/22/13 13:02		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	ND	mg/L	1.0	0.090	1		07/23/13 19:21	24959-67-9	
Chloride	1.0	mg/L	1.0	0.50	1		07/23/13 19:21	16887-00-6	
Fluoride	2.5	mg/L	0.20	0.047	1		07/23/13 19:21	16984-48-8	
Sulfate	658	mg/L	50.0	8.0	50		07/23/13 19:39	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60149083

QC Batch: MERP/7530

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury

Associated Lab Samples: 60149083001, 60149083002

METHOD BLANK: 1223638

Matrix: Water

Associated Lab Samples: 60149083001, 60149083002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	07/22/13 12:50	

LABORATORY CONTROL SAMPLE: 1223639

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.8	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1223640 1223641

Parameter	Units	60149083001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.5	5.0	90	99	70-130	10	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60149083

QC Batch: MERP/7529

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury - Dissolved

Associated Lab Samples: 60149083001, 60149083002

METHOD BLANK: 1223632

Matrix: Water

Associated Lab Samples: 60149083001, 60149083002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	07/22/13 12:37	

LABORATORY CONTROL SAMPLE: 1223633

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	5.2	105	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1223634 1223635

Parameter	Units	60149083001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury, Dissolved	ug/L	ND	5	5	4.7	4.6	93	92	70-130	2	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60149083

QC Batch: MPRP/23561

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60149083001, 60149083002

METHOD BLANK: 1223883

Matrix: Water

Associated Lab Samples: 60149083001, 60149083002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	07/23/13 14:56	
Calcium	ug/L	ND	100	07/23/13 14:56	
Iron	ug/L	ND	50.0	07/23/13 14:56	
Lithium	ug/L	ND	10.0	07/24/13 10:59	
Magnesium	ug/L	ND	50.0	07/23/13 14:56	
Potassium	ug/L	ND	500	07/23/13 14:56	
Silicon	ug/L	ND	500	07/23/13 14:56	
Sodium	ug/L	ND	500	07/23/13 14:56	
Zinc	ug/L	ND	50.0	07/23/13 14:56	

LABORATORY CONTROL SAMPLE: 1223884

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	10200	102	85-115	
Calcium	ug/L	10000	10200	102	85-115	
Iron	ug/L	10000	10200	102	85-115	
Lithium	ug/L	1000	978	98	85-115	
Magnesium	ug/L	10000	10000	100	85-115	
Potassium	ug/L	10000	10000	100	85-115	
Silicon	ug/L	5000	5120	102	85-115	
Sodium	ug/L	10000	10200	102	85-115	
Zinc	ug/L	1000	983	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1223885

1223886

Parameter	Units	60149083001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	711	10000	10000	10800	10600	101	99	70-130	1	8	
Calcium	ug/L	238000	10000	10000	249000	246000	116	88	70-130	1	9	
Iron	ug/L	7210	10000	10000	17200	17000	100	98	70-130	1	10	
Lithium	ug/L	26.1	1000	1000	1060	1130	104	110	70-130	6	20	
Magnesium	ug/L	19200	10000	10000	29500	28300	103	90	70-130	4	9	
Potassium	ug/L	3720	10000	10000	14000	13900	103	102	70-130	0	7	
Silicon	ug/L	8180	5000	5000	13200	13100	101	98	70-130	1	5	
Sodium	ug/L	22100	10000	10000	32500	32600	104	105	70-130	0	8	
Zinc	ug/L	3810	1000	1000	4800	4730	98	92	70-130	1	11	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60149083

QC Batch: MPRP/23559

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60149083001, 60149083002

METHOD BLANK: 1223875

Matrix: Water

Associated Lab Samples: 60149083001, 60149083002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	07/23/13 15:34	
Calcium, Dissolved	ug/L	ND	100	07/23/13 15:34	
Iron, Dissolved	ug/L	ND	50.0	07/23/13 15:34	
Lithium, Dissolved	ug/L	2.8J	10.0	07/24/13 11:36	
Magnesium, Dissolved	ug/L	ND	50.0	07/23/13 15:34	
Potassium, Dissolved	ug/L	ND	500	07/23/13 15:34	
Silicon, Dissolved	ug/L	ND	500	07/23/13 15:34	
Sodium, Dissolved	ug/L	ND	500	07/23/13 15:34	
Zinc, Dissolved	ug/L	ND	50.0	07/23/13 15:34	

LABORATORY CONTROL SAMPLE: 1223876

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	10100	101	85-115	
Calcium, Dissolved	ug/L	10000	9930	99	85-115	
Iron, Dissolved	ug/L	10000	10100	101	85-115	
Lithium, Dissolved	ug/L	1000	986	99	85-115	
Magnesium, Dissolved	ug/L	10000	9360	94	85-115	
Potassium, Dissolved	ug/L	10000	10100	101	85-115	
Silicon, Dissolved	ug/L	5000	4960	99	85-115	
Sodium, Dissolved	ug/L	10000	10200	102	85-115	
Zinc, Dissolved	ug/L	1000	932	93	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1223877

1223878

Parameter	Units	60149083001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	42.6J	10000	10000	10300	10300	102	103	70-130	1	8	
Calcium, Dissolved	ug/L	238000	10000	10000	250000	253000	119	149	70-130	1	9 M1	
Iron, Dissolved	ug/L	ND	10000	10000	10000	10100	100	101	70-130	1	10	
Lithium, Dissolved	ug/L	27.3	1000	1000	1080	1070	106	104	70-130	1	20	
Magnesium, Dissolved	ug/L	19000	10000	10000	29700	29800	107	108	70-130	0	9	
Potassium, Dissolved	ug/L	3750	10000	10000	14300	14400	105	107	70-130	1	7	
Silicon, Dissolved	ug/L	7510	5000	5000	12600	12800	102	106	70-130	1	5	
Sodium, Dissolved	ug/L	22500	10000	10000	33300	33800	108	113	70-130	1	8	
Zinc, Dissolved	ug/L	3490	1000	1000	4470	4480	98	98	70-130	0	11	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60149083

QC Batch: MPRP/23562 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60149083001, 60149083002

METHOD BLANK: 1223887 Matrix: Water

Associated Lab Samples: 60149083001, 60149083002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	07/23/13 15:56	
Cadmium	ug/L	0.056J	0.50	07/23/13 15:56	
Chromium	ug/L	0.24J	1.0	07/23/13 15:56	
Cobalt	ug/L	ND	1.0	07/23/13 15:56	
Copper	ug/L	0.70J	1.0	07/23/13 15:56	
Lead	ug/L	0.14J	1.0	07/23/13 15:56	
Manganese	ug/L	0.39J	1.0	07/23/13 15:56	
Nickel	ug/L	0.083J	1.0	07/23/13 15:56	
Selenium	ug/L	0.14J	1.0	07/23/13 15:56	

LABORATORY CONTROL SAMPLE: 1223888

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	38.9	97	85-115	
Cadmium	ug/L	40	39.7	99	85-115	
Chromium	ug/L	40	39.5	99	85-115	
Cobalt	ug/L	40	38.7	97	85-115	
Copper	ug/L	40	38.8	97	85-115	
Lead	ug/L	40	39.7	99	85-115	
Manganese	ug/L	40	40.5	101	85-115	
Nickel	ug/L	40	38.2	96	85-115	
Selenium	ug/L	40	38.4	96	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1223889 1223890

Parameter	Units	60149083002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	1.1	40	40	40.3	41.2	98	100	70-130	2	20	
Cadmium	ug/L	22.1	40	40	61.4	62.9	98	102	70-130	2	20	
Chromium	ug/L	0.74J	40	40	40.4	40.7	99	100	70-130	1	20	
Cobalt	ug/L	2.5	40	40	40.5	41.3	95	97	70-130	2	20	
Copper	ug/L	162	40	40	202	206	100	112	70-130	2	20	
Lead	ug/L	12.5	40	40	52.7	53.7	100	103	70-130	2	20	
Manganese	ug/L	1870	40	40	1960	1990	228	298	70-130	1	20 M1	
Nickel	ug/L	3.9	40	40	41.2	41.6	93	94	70-130	1	20	
Selenium	ug/L	0.24J	40	40	40.7	41.1	101	102	70-130	1	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60149083

QC Batch: MPRP/23560

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60149083001, 60149083002

METHOD BLANK: 1223879

Matrix: Water

Associated Lab Samples: 60149083001, 60149083002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	07/23/13 14:39	
Cadmium, Dissolved	ug/L	0.058J	0.50	07/23/13 14:39	
Chromium, Dissolved	ug/L	0.24J	1.0	07/23/13 14:39	
Cobalt, Dissolved	ug/L	ND	1.0	07/23/13 14:39	
Copper, Dissolved	ug/L	0.42J	1.0	07/23/13 14:39	
Lead, Dissolved	ug/L	0.16J	1.0	07/23/13 14:39	
Manganese, Dissolved	ug/L	0.22J	1.0	07/23/13 14:39	
Nickel, Dissolved	ug/L	ND	1.0	07/23/13 14:39	
Selenium, Dissolved	ug/L	ND	1.0	07/23/13 14:39	

LABORATORY CONTROL SAMPLE: 1223880

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	39.6	99	85-115	
Cadmium, Dissolved	ug/L	40	39.8	99	85-115	
Chromium, Dissolved	ug/L	40	39.7	99	85-115	
Cobalt, Dissolved	ug/L	40	39.2	98	85-115	
Copper, Dissolved	ug/L	40	39.2	98	85-115	
Lead, Dissolved	ug/L	40	39.6	99	85-115	
Manganese, Dissolved	ug/L	40	39.8	100	85-115	
Nickel, Dissolved	ug/L	40	38.8	97	85-115	
Selenium, Dissolved	ug/L	40	40.3	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1223881

1223882

Parameter	Units	60149083002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	ND	40	40	40.2	40.0	100	100	70-130	0	20	
Cadmium, Dissolved	ug/L	18.9	40	40	59.3	58.4	101	99	70-130	1	20	
Chromium, Dissolved	ug/L	0.41J	40	40	40.1	39.5	99	98	70-130	1	20	
Cobalt, Dissolved	ug/L	4.4	40	40	42.2	42.5	95	95	70-130	1	20	
Copper, Dissolved	ug/L	9.7	40	40	48.0	46.4	96	92	70-130	3	20	
Lead, Dissolved	ug/L	0.17J	40	40	40.1	39.7	100	99	70-130	1	20	
Manganese, Dissolved	ug/L	1830	40	40	1920	1920	228	222	70-130	0	20 M1	
Nickel, Dissolved	ug/L	4.4	40	40	41.2	41.1	92	92	70-130	0	20	
Selenium, Dissolved	ug/L	0.22J	40	40	41.8	40.3	104	100	70-130	4	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60149083

QC Batch: WET/42483

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60149083001, 60149083002

METHOD BLANK: 1223801

Matrix: Water

Associated Lab Samples: 60149083001, 60149083002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	07/22/13 12:00	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	07/22/13 12:00	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	07/22/13 12:00	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	07/22/13 12:00	

LABORATORY CONTROL SAMPLE: 1223802

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	514	103	90-110	

SAMPLE DUPLICATE: 1223805

Parameter	Units	60149193002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	76.9	85.1	10	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	73.4	85.1	15	10 D6	

SAMPLE DUPLICATE: 1223806

Parameter	Units	60149086001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	221	223	1	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	221	223	1	10	

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QUALITY CONTROL DATA

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60149083

QC Batch: WETA/25553 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60149083001, 60149083002

METHOD BLANK: 1224205 Matrix: Water

Associated Lab Samples: 60149083001, 60149083002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	07/23/13 09:10	
Chloride	mg/L	ND	1.0	07/23/13 09:10	
Fluoride	mg/L	ND	0.20	07/23/13 09:10	
Sulfate	mg/L	ND	1.0	07/23/13 09:10	

LABORATORY CONTROL SAMPLE: 1224206

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.1	101	90-110	
Chloride	mg/L	5	4.9	99	90-110	
Fluoride	mg/L	2.5	2.5	101	90-110	
Sulfate	mg/L	5	5.1	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1224207 1224208

Parameter	Units	60148815001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Bromide	mg/L	ND	500	500	505	510	101	102	75-119	1	10
Chloride	mg/L	ND	500	500	502	501	89	88	64-118	0	12
Fluoride	mg/L	ND	250	250	255	254	102	102	75-110	1	10
Sulfate	mg/L	398	500	500	920	925	105	105	61-119	1	10

MATRIX SPIKE SAMPLE: 1224209

Parameter	Units	60149015001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	50	52.5	105	75-119	
Chloride	mg/L	121	50	176	110	64-118	
Fluoride	mg/L	ND	25	26.4	106	75-110	
Sulfate	mg/L	262	100	365	103	61-119	

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60149083

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D6 The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RICO-ARGENTINE MINE SITE

Pace Project No.: 60149083

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60149083001	DR3A1307160400	EPA 200.7	MPRP/23561	EPA 200.7	ICP/18502
60149083002	DR3A1307170400	EPA 200.7	MPRP/23561	EPA 200.7	ICP/18502
60149083001	DR3A1307160400	EPA 200.7	MPRP/23559	EPA 200.7	ICP/18501
60149083002	DR3A1307170400	EPA 200.7	MPRP/23559	EPA 200.7	ICP/18501
60149083001	DR3A1307160400	EPA 200.8	MPRP/23562	EPA 200.8	ICPM/2400
60149083002	DR3A1307170400	EPA 200.8	MPRP/23562	EPA 200.8	ICPM/2400
60149083001	DR3A1307160400	EPA 200.8	MPRP/23560	EPA 200.8	ICPM/2401
60149083002	DR3A1307170400	EPA 200.8	MPRP/23560	EPA 200.8	ICPM/2401
60149083001	DR3A1307160400	EPA 245.1	MERP/7530	EPA 245.1	MERC/7484
60149083002	DR3A1307170400	EPA 245.1	MERP/7530	EPA 245.1	MERC/7484
60149083001	DR3A1307160400	EPA 245.1	MERP/7529	EPA 245.1	MERC/7483
60149083002	DR3A1307170400	EPA 245.1	MERP/7529	EPA 245.1	MERC/7483
60149083001	DR3A1307160400	SM 2320B	WET/42483		
60149083002	DR3A1307170400	SM 2320B	WET/42483		
60149083001	DR3A1307160400	EPA 300.0	WETA/25553		
60149083002	DR3A1307170400	EPA 300.0	WETA/25553		

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Sample Condition Upon Receipt
ESI Tech Spec Client

WO#: 60149083



60149083

Client Name: BP Rice

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 1Z 733 687 84 4796 0743 Pace Shipping Label Used? Yes ☐ No ☒

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☒ Other ☐

Thermometer Used: T-112 / T-194

Type of Ice: Wet Blue ☐ None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 4.2

Date and initials of person examining
contents: KE 7/18/13

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses	Matrix: <u>WT</u>	13.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	17. List State:

Client Notification/ Resolution:

Copy COC to Client? Y / N

Field Data Required? Y / N

Person Contacted: _____

Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: mw 6/2/13

Date: 7/19/13

Temp Log Record start and finish times
when unpacking cooler, if >20 min,
recheck sample temps.

Start: 11:35 Start:

End: 11:45 End:

Temp: Temp:

July 29, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: Rico-Argentine Mine Site
Pace Project No.: 60149304

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on July 20, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Rico-Argentine Mine Site

Pace Project No.: 60149304

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Rico-Argentine Mine Site

Pace Project No.: 60149304

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60149304001	DR3A1307180400	Water	07/18/13 04:00	07/20/13 09:20
60149304002	DR3A1307190400	Water	07/19/13 04:00	07/20/13 09:20

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SAMPLE ANALYTE COUNT

Project: Rico-Argentine Mine Site

Pace Project No.: 60149304

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60149304001	DR3A1307180400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60149304002	DR3A1307190400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60149304

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: July 29, 2013

General Information:

2 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60149304

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: July 29, 2013

General Information:

2 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23559

B: Analyte was detected in the associated method blank.

- BLANK for HBN 299667 [MPRP/235 (Lab ID: 1223875)]
- Lithium, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23559

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60149083001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1223878)
- Calcium, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60149304

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: July 29, 2013

General Information:

2 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23562

B: Analyte was detected in the associated method blank.

- BLANK for HBN 299670 [MPRP/235 (Lab ID: 1223887)]
 - Chromium
 - Selenium

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23562

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60149083002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1223889)
 - Manganese
- MSD (Lab ID: 1223890)
 - Manganese

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60149304

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: July 29, 2013

General Information:

2 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23560

B: Analyte was detected in the associated method blank.

- BLANK for HBN 299668 [MPRP/235 (Lab ID: 1223879)
 - Chromium, Dissolved
 - Lead, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23560

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60149083002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1223881)
 - Manganese, Dissolved
- MSD (Lab ID: 1223882)
 - Manganese, Dissolved

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60149304

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: July 29, 2013

General Information:

2 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60149304

Method: EPA 245.1
Description: 245.1 Mercury, Dissolved
Client: BP AMEC
Date: July 29, 2013

General Information:

2 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60149304

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: July 29, 2013

General Information:

2 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

QC Batch: WET/42483

D6: The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.

- DUP (Lab ID: 1223805)
- Alkalinity, Bicarbonate (CaCO₃)

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60149304

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: July 29, 2013

General Information:

2 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60149304

Sample: DR3A1307180400 Lab ID: 60149304001 Collected: 07/18/13 04:00 Received: 07/20/13 09:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	760	ug/L	75.0	16.6	1	07/22/13 16:25	07/23/13 15:18	7429-90-5	
Calcium	234000	ug/L	100	10.4	1	07/22/13 16:25	07/23/13 15:18	7440-70-2	
Iron	7490	ug/L	50.0	11.6	1	07/22/13 16:25	07/23/13 15:18	7439-89-6	
Lithium	25.7	ug/L	10.0	2.4	1	07/22/13 16:25	07/24/13 11:27	7439-93-2	
Magnesium	19100	ug/L	50.0	6.5	1	07/22/13 16:25	07/23/13 15:18	7439-95-4	
Potassium	3710	ug/L	500	44.4	1	07/22/13 16:25	07/23/13 15:18	7440-09-7	
Silicon	8110	ug/L	500	23.9	1	07/22/13 16:25	07/23/13 15:18	7440-21-3	
Sodium	21800	ug/L	500	21.7	1	07/22/13 16:25	07/23/13 15:18	7440-23-5	
Zinc	3900	ug/L	50.0	3.3	1	07/22/13 16:25	07/23/13 15:18	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	60.2J	ug/L	75.0	16.6	1	07/22/13 16:25	07/23/13 15:53	7429-90-5	
Calcium, Dissolved	236000	ug/L	100	10.4	1	07/22/13 16:25	07/23/13 15:53	7440-70-2	D9
Iron, Dissolved	ND	ug/L	50.0	11.6	1	07/22/13 16:25	07/23/13 15:53	7439-89-6	
Lithium, Dissolved	24.9	ug/L	10.0	2.4	1	07/22/13 16:25	07/24/13 11:55	7439-93-2	B
Magnesium, Dissolved	19400	ug/L	50.0	6.5	1	07/22/13 16:25	07/23/13 15:53	7439-95-4	D9
Potassium, Dissolved	3730	ug/L	500	44.4	1	07/22/13 16:25	07/23/13 15:53	7440-09-7	D9
Silicon, Dissolved	7400	ug/L	500	23.9	1	07/22/13 16:25	07/23/13 15:53	7440-21-3	
Sodium, Dissolved	21600	ug/L	500	21.7	1	07/22/13 16:25	07/23/13 15:53	7440-23-5	
Zinc, Dissolved	3440	ug/L	50.0	3.3	1	07/22/13 16:25	07/23/13 15:53	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.1	ug/L	1.0	0.050	1	07/22/13 16:25	07/23/13 16:25	7440-38-2	
Cadmium	21.8	ug/L	0.50	0.050	1	07/22/13 16:25	07/23/13 16:25	7440-43-9	
Chromium	0.59J	ug/L	1.0	0.070	1	07/22/13 16:25	07/23/13 16:25	7440-47-3	B
Cobalt	2.6	ug/L	1.0	0.080	1	07/22/13 16:25	07/23/13 16:25	7440-48-4	
Copper	174	ug/L	1.0	0.12	1	07/22/13 16:25	07/23/13 16:25	7440-50-8	
Lead	12.8	ug/L	1.0	0.030	1	07/22/13 16:25	07/23/13 16:25	7439-92-1	
Manganese	1880	ug/L	1.0	0.14	1	07/22/13 16:25	07/23/13 16:25	7439-96-5	
Nickel	4.3	ug/L	1.0	0.070	1	07/22/13 16:25	07/23/13 16:25	7440-02-0	
Selenium	0.18J	ug/L	1.0	0.14	1	07/22/13 16:25	07/23/13 16:25	7782-49-2	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	1.0	0.050	1	07/22/13 16:25	07/23/13 15:08	7440-38-2	
Cadmium, Dissolved	19.1	ug/L	0.50	0.050	1	07/22/13 16:25	07/23/13 15:08	7440-43-9	
Chromium, Dissolved	0.24J	ug/L	1.0	0.070	1	07/22/13 16:25	07/23/13 15:08	7440-47-3	B
Cobalt, Dissolved	4.1	ug/L	1.0	0.080	1	07/22/13 16:25	07/23/13 15:08	7440-48-4	D9
Copper, Dissolved	9.2	ug/L	1.0	0.12	1	07/22/13 16:25	07/23/13 15:08	7440-50-8	
Lead, Dissolved	0.24J	ug/L	1.0	0.030	1	07/22/13 16:25	07/23/13 15:08	7439-92-1	B
Manganese, Dissolved	1860	ug/L	1.0	0.14	1	07/22/13 16:25	07/23/13 15:08	7439-96-5	
Nickel, Dissolved	4.2	ug/L	1.0	0.070	1	07/22/13 16:25	07/23/13 15:08	7440-02-0	
Selenium, Dissolved	0.18J	ug/L	1.0	0.14	1	07/22/13 16:25	07/23/13 15:08	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/22/13 14:30	07/23/13 09:57	7439-97-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60149304

Sample: DR3A1307180400		Lab ID: 60149304001	Collected: 07/18/13 04:00	Received: 07/20/13 09:20	Matrix: Water				
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND ug/L		0.20	0.14	1	07/22/13 14:30	07/23/13 09:28	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	101 mg/L		20.0	1.2	1		07/22/13 13:20		
Alkalinity, Carbonate (CaCO ₃)	ND mg/L		20.0	1.2	1		07/22/13 13:20		
Alkalinity, Hydroxide (CaCO ₃)	ND mg/L		20.0	1.2	1		07/22/13 13:20		
Alkalinity, Total as CaCO ₃	101 mg/L		20.0	1.2	1		07/22/13 13:20		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.77J mg/L		1.0	0.090	1		07/26/13 23:28	24959-67-9	
Chloride	1.0 mg/L		1.0	0.50	1		07/26/13 23:28	16887-00-6	
Fluoride	2.3 mg/L		0.20	0.047	1		07/26/13 23:28	16984-48-8	
Sulfate	719 mg/L		50.0	8.0	50		07/26/13 23:44	14808-79-8	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60149304

Sample: DR3A1307190400 Lab ID: 60149304002 Collected: 07/19/13 04:00 Received: 07/20/13 09:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	779	ug/L	75.0	16.6	1	07/22/13 16:25	07/23/13 15:22	7429-90-5	
Calcium	238000	ug/L	100	10.4	1	07/22/13 16:25	07/23/13 15:22	7440-70-2	
Iron	7570	ug/L	50.0	11.6	1	07/22/13 16:25	07/23/13 15:22	7439-89-6	
Lithium	26.5	ug/L	10.0	2.4	1	07/22/13 16:25	07/24/13 11:30	7439-93-2	
Magnesium	19600	ug/L	50.0	6.5	1	07/22/13 16:25	07/23/13 15:22	7439-95-4	
Potassium	3760	ug/L	500	44.4	1	07/22/13 16:25	07/23/13 15:22	7440-09-7	
Silicon	8220	ug/L	500	23.9	1	07/22/13 16:25	07/23/13 15:22	7440-21-3	
Sodium	21600	ug/L	500	21.7	1	07/22/13 16:25	07/23/13 15:22	7440-23-5	
Zinc	3860	ug/L	50.0	3.3	1	07/22/13 16:25	07/23/13 15:22	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	45.1J	ug/L	75.0	16.6	1	07/22/13 16:25	07/23/13 15:56	7429-90-5	
Calcium, Dissolved	249000	ug/L	100	10.4	1	07/22/13 16:25	07/23/13 15:56	7440-70-2	D9
Iron, Dissolved	ND	ug/L	50.0	11.6	1	07/22/13 16:25	07/23/13 15:56	7439-89-6	
Lithium, Dissolved	27.4	ug/L	10.0	2.4	1	07/22/13 16:25	07/24/13 12:05	7439-93-2	B,D9
Magnesium, Dissolved	20700	ug/L	50.0	6.5	1	07/22/13 16:25	07/23/13 15:56	7439-95-4	D9
Potassium, Dissolved	3890	ug/L	500	44.4	1	07/22/13 16:25	07/23/13 15:56	7440-09-7	D9
Silicon, Dissolved	7830	ug/L	500	23.9	1	07/22/13 16:25	07/23/13 15:56	7440-21-3	
Sodium, Dissolved	22400	ug/L	500	21.7	1	07/22/13 16:25	07/23/13 15:56	7440-23-5	D9
Zinc, Dissolved	3730	ug/L	50.0	3.3	1	07/22/13 16:25	07/23/13 15:56	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.2	ug/L	1.0	0.050	1	07/22/13 16:25	07/23/13 16:30	7440-38-2	
Cadmium	22.0	ug/L	0.50	0.050	1	07/22/13 16:25	07/23/13 16:30	7440-43-9	
Chromium	0.55J	ug/L	1.0	0.070	1	07/22/13 16:25	07/23/13 16:30	7440-47-3	B
Cobalt	2.5	ug/L	1.0	0.080	1	07/22/13 16:25	07/23/13 16:30	7440-48-4	
Copper	172	ug/L	1.0	0.12	1	07/22/13 16:25	07/23/13 16:30	7440-50-8	
Lead	12.8	ug/L	1.0	0.030	1	07/22/13 16:25	07/23/13 16:30	7439-92-1	
Manganese	1870	ug/L	1.0	0.14	1	07/22/13 16:25	07/23/13 16:30	7439-96-5	
Nickel	4.1	ug/L	1.0	0.070	1	07/22/13 16:25	07/23/13 16:30	7440-02-0	
Selenium	0.22J	ug/L	1.0	0.14	1	07/22/13 16:25	07/23/13 16:30	7782-49-2	B
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	1.0	0.050	1	07/22/13 16:25	07/23/13 15:12	7440-38-2	
Cadmium, Dissolved	19.7	ug/L	0.50	0.050	1	07/22/13 16:25	07/23/13 15:12	7440-43-9	
Chromium, Dissolved	0.34J	ug/L	1.0	0.070	1	07/22/13 16:25	07/23/13 15:12	7440-47-3	B
Cobalt, Dissolved	4.1	ug/L	1.0	0.080	1	07/22/13 16:25	07/23/13 15:12	7440-48-4	D9
Copper, Dissolved	9.2	ug/L	1.0	0.12	1	07/22/13 16:25	07/23/13 15:12	7440-50-8	
Lead, Dissolved	0.42J	ug/L	1.0	0.030	1	07/22/13 16:25	07/23/13 15:12	7439-92-1	B
Manganese, Dissolved	1880	ug/L	1.0	0.14	1	07/22/13 16:25	07/23/13 15:12	7439-96-5	D9
Nickel, Dissolved	4.4	ug/L	1.0	0.070	1	07/22/13 16:25	07/23/13 15:12	7440-02-0	D9
Selenium, Dissolved	0.14J	ug/L	1.0	0.14	1	07/22/13 16:25	07/23/13 15:12	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/22/13 14:30	07/23/13 10:03	7439-97-6	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60149304

Sample: DR3A1307190400		Lab ID: 60149304002		Collected: 07/19/13 04:00		Received: 07/20/13 09:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/22/13 14:30	07/23/13 09:34	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	108	mg/L	20.0	1.2	1		07/22/13 13:24		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/22/13 13:24		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/22/13 13:24		
Alkalinity, Total as CaCO ₃	108	mg/L	20.0	1.2	1		07/22/13 13:24		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.65J	mg/L	1.0	0.090	1		07/27/13 00:00	24959-67-9	
Chloride	0.90J	mg/L	1.0	0.50	1		07/27/13 00:00	16887-00-6	
Fluoride	2.1	mg/L	0.20	0.047	1		07/27/13 00:00	16984-48-8	
Sulfate	700	mg/L	50.0	8.0	50		07/27/13 00:17	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60149304

QC Batch: MERP/7533

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury

Associated Lab Samples: 60149304001, 60149304002

METHOD BLANK: 1223929

Matrix: Water

Associated Lab Samples: 60149304001, 60149304002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	07/23/13 09:50	

LABORATORY CONTROL SAMPLE: 1223930

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.8	96	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1223931

1223932

Parameter	Units	60149304001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.8	4.1	96	81	70-130	17	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60149304

QC Batch: MERP/7532

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury - Dissolved

Associated Lab Samples: 60149304001, 60149304002

METHOD BLANK: 1223925

Matrix: Water

Associated Lab Samples: 60149304001, 60149304002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	07/23/13 09:23	

LABORATORY CONTROL SAMPLE: 1223926

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	4.4	89	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1223927 1223928

Parameter	Units	60149304001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury, Dissolved	ug/L	ND	5	5	4.2	4.4	83	86	70-130	4	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60149304

QC Batch: MPRP/23561

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60149304001, 60149304002

METHOD BLANK: 1223883

Matrix: Water

Associated Lab Samples: 60149304001, 60149304002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	07/23/13 14:56	
Calcium	ug/L	ND	100	07/23/13 14:56	
Iron	ug/L	ND	50.0	07/23/13 14:56	
Lithium	ug/L	ND	10.0	07/24/13 10:59	
Magnesium	ug/L	ND	50.0	07/23/13 14:56	
Potassium	ug/L	ND	500	07/23/13 14:56	
Silicon	ug/L	ND	500	07/23/13 14:56	
Sodium	ug/L	ND	500	07/23/13 14:56	
Zinc	ug/L	ND	50.0	07/23/13 14:56	

LABORATORY CONTROL SAMPLE: 1223884

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	10200	102	85-115	
Calcium	ug/L	10000	10200	102	85-115	
Iron	ug/L	10000	10200	102	85-115	
Lithium	ug/L	1000	978	98	85-115	
Magnesium	ug/L	10000	10000	100	85-115	
Potassium	ug/L	10000	10000	100	85-115	
Silicon	ug/L	5000	5120	102	85-115	
Sodium	ug/L	10000	10200	102	85-115	
Zinc	ug/L	1000	983	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1223885

1223886

Parameter	Units	60149083001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	711	10000	10000	10800	10600	101	99	70-130	1	8	
Calcium	ug/L	238000	10000	10000	249000	246000	116	88	70-130	1	9	
Iron	ug/L	7210	10000	10000	17200	17000	100	98	70-130	1	10	
Lithium	ug/L	26.1	1000	1000	1060	1130	104	110	70-130	6	20	
Magnesium	ug/L	19200	10000	10000	29500	28300	103	90	70-130	4	9	
Potassium	ug/L	3720	10000	10000	14000	13900	103	102	70-130	0	7	
Silicon	ug/L	8180	5000	5000	13200	13100	101	98	70-130	1	5	
Sodium	ug/L	22100	10000	10000	32500	32600	104	105	70-130	0	8	
Zinc	ug/L	3810	1000	1000	4800	4730	98	92	70-130	1	11	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60149304

QC Batch: MPRP/23559

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60149304001, 60149304002

METHOD BLANK: 1223875

Matrix: Water

Associated Lab Samples: 60149304001, 60149304002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	07/23/13 15:34	
Calcium, Dissolved	ug/L	ND	100	07/23/13 15:34	
Iron, Dissolved	ug/L	ND	50.0	07/23/13 15:34	
Lithium, Dissolved	ug/L	2.8J	10.0	07/24/13 11:36	
Magnesium, Dissolved	ug/L	ND	50.0	07/23/13 15:34	
Potassium, Dissolved	ug/L	ND	500	07/23/13 15:34	
Silicon, Dissolved	ug/L	ND	500	07/23/13 15:34	
Sodium, Dissolved	ug/L	ND	500	07/23/13 15:34	
Zinc, Dissolved	ug/L	ND	50.0	07/23/13 15:34	

LABORATORY CONTROL SAMPLE: 1223876

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	10100	101	85-115	
Calcium, Dissolved	ug/L	10000	9930	99	85-115	
Iron, Dissolved	ug/L	10000	10100	101	85-115	
Lithium, Dissolved	ug/L	1000	986	99	85-115	
Magnesium, Dissolved	ug/L	10000	9360	94	85-115	
Potassium, Dissolved	ug/L	10000	10100	101	85-115	
Silicon, Dissolved	ug/L	5000	4960	99	85-115	
Sodium, Dissolved	ug/L	10000	10200	102	85-115	
Zinc, Dissolved	ug/L	1000	932	93	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1223877

1223878

Parameter	Units	60149083001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	42.6J	10000	10000	10300	10300	102	103	70-130	1	8	
Calcium, Dissolved	ug/L	238000	10000	10000	250000	253000	119	149	70-130	1	9 M1	
Iron, Dissolved	ug/L	ND	10000	10000	10000	10100	100	101	70-130	1	10	
Lithium, Dissolved	ug/L	27.3	1000	1000	1080	1070	106	104	70-130	1	20	
Magnesium, Dissolved	ug/L	19000	10000	10000	29700	29800	107	108	70-130	0	9	
Potassium, Dissolved	ug/L	3750	10000	10000	14300	14400	105	107	70-130	1	7	
Silicon, Dissolved	ug/L	7510	5000	5000	12600	12800	102	106	70-130	1	5	
Sodium, Dissolved	ug/L	22500	10000	10000	33300	33800	108	113	70-130	1	8	
Zinc, Dissolved	ug/L	3490	1000	1000	4470	4480	98	98	70-130	0	11	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60149304

QC Batch: MPRP/23562 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60149304001, 60149304002

METHOD BLANK: 1223887 Matrix: Water

Associated Lab Samples: 60149304001, 60149304002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	07/23/13 15:56	
Cadmium	ug/L	0.056J	0.50	07/23/13 15:56	
Chromium	ug/L	0.24J	1.0	07/23/13 15:56	
Cobalt	ug/L	ND	1.0	07/23/13 15:56	
Copper	ug/L	0.70J	1.0	07/23/13 15:56	
Lead	ug/L	0.14J	1.0	07/23/13 15:56	
Manganese	ug/L	0.39J	1.0	07/23/13 15:56	
Nickel	ug/L	0.083J	1.0	07/23/13 15:56	
Selenium	ug/L	0.14J	1.0	07/23/13 15:56	

LABORATORY CONTROL SAMPLE: 1223888

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	38.9	97	85-115	
Cadmium	ug/L	40	39.7	99	85-115	
Chromium	ug/L	40	39.5	99	85-115	
Cobalt	ug/L	40	38.7	97	85-115	
Copper	ug/L	40	38.8	97	85-115	
Lead	ug/L	40	39.7	99	85-115	
Manganese	ug/L	40	40.5	101	85-115	
Nickel	ug/L	40	38.2	96	85-115	
Selenium	ug/L	40	38.4	96	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1223889 1223890

Parameter	Units	60149083002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	1.1	40	40	40.3	41.2	98	100	70-130	2	20	
Cadmium	ug/L	22.1	40	40	61.4	62.9	98	102	70-130	2	20	
Chromium	ug/L	0.74J	40	40	40.4	40.7	99	100	70-130	1	20	
Cobalt	ug/L	2.5	40	40	40.5	41.3	95	97	70-130	2	20	
Copper	ug/L	162	40	40	202	206	100	112	70-130	2	20	
Lead	ug/L	12.5	40	40	52.7	53.7	100	103	70-130	2	20	
Manganese	ug/L	1870	40	40	1960	1990	228	298	70-130	1	20 M1	
Nickel	ug/L	3.9	40	40	41.2	41.6	93	94	70-130	1	20	
Selenium	ug/L	0.24J	40	40	40.7	41.1	101	102	70-130	1	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60149304

QC Batch: MPRP/23560

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60149304001, 60149304002

METHOD BLANK: 1223879

Matrix: Water

Associated Lab Samples: 60149304001, 60149304002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	07/23/13 14:39	
Cadmium, Dissolved	ug/L	0.058J	0.50	07/23/13 14:39	
Chromium, Dissolved	ug/L	0.24J	1.0	07/23/13 14:39	
Cobalt, Dissolved	ug/L	ND	1.0	07/23/13 14:39	
Copper, Dissolved	ug/L	0.42J	1.0	07/23/13 14:39	
Lead, Dissolved	ug/L	0.16J	1.0	07/23/13 14:39	
Manganese, Dissolved	ug/L	0.22J	1.0	07/23/13 14:39	
Nickel, Dissolved	ug/L	ND	1.0	07/23/13 14:39	
Selenium, Dissolved	ug/L	ND	1.0	07/23/13 14:39	

LABORATORY CONTROL SAMPLE: 1223880

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	39.6	99	85-115	
Cadmium, Dissolved	ug/L	40	39.8	99	85-115	
Chromium, Dissolved	ug/L	40	39.7	99	85-115	
Cobalt, Dissolved	ug/L	40	39.2	98	85-115	
Copper, Dissolved	ug/L	40	39.2	98	85-115	
Lead, Dissolved	ug/L	40	39.6	99	85-115	
Manganese, Dissolved	ug/L	40	39.8	100	85-115	
Nickel, Dissolved	ug/L	40	38.8	97	85-115	
Selenium, Dissolved	ug/L	40	40.3	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1223881

1223882

Parameter	Units	60149083002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	ND	40	40	40.2	40.0	100	100	70-130	0	20	
Cadmium, Dissolved	ug/L	18.9	40	40	59.3	58.4	101	99	70-130	1	20	
Chromium, Dissolved	ug/L	0.41J	40	40	40.1	39.5	99	98	70-130	1	20	
Cobalt, Dissolved	ug/L	4.4	40	40	42.2	42.5	95	95	70-130	1	20	
Copper, Dissolved	ug/L	9.7	40	40	48.0	46.4	96	92	70-130	3	20	
Lead, Dissolved	ug/L	0.17J	40	40	40.1	39.7	100	99	70-130	1	20	
Manganese, Dissolved	ug/L	1830	40	40	1920	1920	228	222	70-130	0	20 M1	
Nickel, Dissolved	ug/L	4.4	40	40	41.2	41.1	92	92	70-130	0	20	
Selenium, Dissolved	ug/L	0.22J	40	40	41.8	40.3	104	100	70-130	4	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60149304

QC Batch: WET/42483

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60149304001, 60149304002

METHOD BLANK: 1223801

Matrix: Water

Associated Lab Samples: 60149304001, 60149304002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	07/22/13 12:00	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	07/22/13 12:00	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	07/22/13 12:00	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	07/22/13 12:00	

LABORATORY CONTROL SAMPLE: 1223802

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	514	103	90-110	

SAMPLE DUPLICATE: 1223805

Parameter	Units	60149193002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	76.9	85.1	10	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	73.4	85.1	15	10 D6	

SAMPLE DUPLICATE: 1223806

Parameter	Units	60149086001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	221	223	1	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	221	223	1	10	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60149304

QC Batch: WETA/25593

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60149304001, 60149304002

METHOD BLANK: 1226326

Matrix: Water

Associated Lab Samples: 60149304001, 60149304002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	07/26/13 17:59	
Chloride	mg/L	ND	1.0	07/26/13 17:59	
Fluoride	mg/L	ND	0.20	07/26/13 17:59	
Sulfate	mg/L	ND	1.0	07/26/13 17:59	

LABORATORY CONTROL SAMPLE: 1226327

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.1	102	90-110	
Chloride	mg/L	5	4.9	99	90-110	
Fluoride	mg/L	2.5	2.4	97	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1226328

1226329

Parameter	Units	60148857001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Bromide	mg/L	ND	5	5	5.4	5.6	109	111	75-119	3	10
Chloride	mg/L	11.2	5	5	16.0	16.1	97	99	64-118	0	12
Fluoride	mg/L	0.49	25	25	23.9	23.3	94	91	75-110	3	10
Sulfate	mg/L	41.3	50	50	85.8	84.1	89	86	61-119	2	10

MATRIX SPIKE SAMPLE: 1226330

Parameter	Units	60149131006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	1000	940	94	75-119	
Chloride	mg/L	294	1000	1110	81	64-118	
Fluoride	mg/L	ND	500	442	88	75-110	
Sulfate	mg/L	1790	1000	2790	100	61-119	

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QUALIFIERS

Project: Rico-Argentine Mine Site

Pace Project No.: 60149304

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D6 The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rico-Argentine Mine Site

Pace Project No.: 60149304

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60149304001	DR3A1307180400	EPA 200.7	MPRP/23561	EPA 200.7	ICP/18502
60149304002	DR3A1307190400	EPA 200.7	MPRP/23561	EPA 200.7	ICP/18502
60149304001	DR3A1307180400	EPA 200.7	MPRP/23559	EPA 200.7	ICP/18501
60149304002	DR3A1307190400	EPA 200.7	MPRP/23559	EPA 200.7	ICP/18501
60149304001	DR3A1307180400	EPA 200.8	MPRP/23562	EPA 200.8	ICPM/2400
60149304002	DR3A1307190400	EPA 200.8	MPRP/23562	EPA 200.8	ICPM/2400
60149304001	DR3A1307180400	EPA 200.8	MPRP/23560	EPA 200.8	ICPM/2401
60149304002	DR3A1307190400	EPA 200.8	MPRP/23560	EPA 200.8	ICPM/2401
60149304001	DR3A1307180400	EPA 245.1	MERP/7533	EPA 245.1	MERC/7490
60149304002	DR3A1307190400	EPA 245.1	MERP/7533	EPA 245.1	MERC/7490
60149304001	DR3A1307180400	EPA 245.1	MERP/7532	EPA 245.1	MERC/7489
60149304002	DR3A1307190400	EPA 245.1	MERP/7532	EPA 245.1	MERC/7489
60149304001	DR3A1307180400	SM 2320B	WET/42483		
60149304002	DR3A1307190400	SM 2320B	WET/42483		
60149304001	DR3A1307180400	EPA 300.0	WETA/25593		
60149304002	DR3A1307190400	EPA 300.0	WETA/25593		

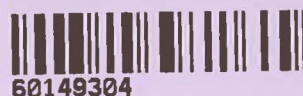
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Sample Condition Upon Receipt
ESI Tech Spec Client

WO#: 60149304



Client Name: BP Amec

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 1Z 733 087 22 1005 6672 Pace Shipping Label Used? Yes ☐ No ☒

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☒ Bubble Bags ☐ Foam ☐ None ☐ Other ☐

Thermometer Used: T-112 / T-194 Type of Ice: Wet Blue ☐ None ☐ Samples received on ice, cooling process has begun.

Cooler Temperature: 2-1

(circle one)

Date and initials of person examining contents: JMS 7/22/13

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses	Matrix: <u>water</u>	13.
All containers needing preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed <u>ms</u>
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased): <u>NA</u>		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:

Client Notification/ Resolution:

Copy COC to Client? Y / N

Field Data Required? Y / N

Person Contacted: _____

Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [Signature]

Date: 7/22/13

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.	
Start: <u>1105</u>	Start:
End: <u>1110</u>	End:
Temp:	Temp:

Laboratory Management Program LaMP Chain of Custody Record

Page 1 of 1

BP/ARC Project Name: Rico-Argentine Mine Site

Req Due Date (mm/dd/yy): _____

Rush TAT: Yes X No _____

BP/ARC Facility No: _____

Lab Work Order Number: _____

Lab Name: Pace Analytical Laboratories, Inc.	BP/ARC Facility Address: Rico-Argentine Mine	Consultant/Contractor: AMEC E&I, Inc.
Lab Address: 9608 Loiret Blvd., Lenexa, KS 66219	City, State, ZIP Code: Rico, Colorado	Consultant/Contractor Project No: SA11161313.300H
Lab PM: Heather Wilson	Lead Regulatory Agency: U.S. EPA Region 8	Address: 10670 White Rock Road, Suite 100, Rancho Cordova, CA
Lab Phone: (913) 563-1407	California Global ID No.: NA	Consultant/Contractor PM: Marc Lombardi
Lab Shipping Acct: UPS # 733W87	Enfos Proposal No: D00LL-0010 WR 266494	Phone: 916-636-3200
Lab Bottle Order No: NA	Accounting Mode: Provision <u>X</u> OOC-BU _____ OOC-RM _____	Email Report/EDD To: lynda.lombardi@amec.com
Other Info: 2013 517 Injection Treatability Study	Stage: 4-Execute Activity: Spend	Invoice To: BP/ARC <u>X</u> Contractor _____

BP/ARC EBM: Anthony Brown				Matrix			No. Containers / Preservative						Requested Analyses										Report Type & QC Level			
EBM Phone: 714-228-6770				Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Methanol	Tot Metals-see notes (E200.7/200.8/E245.1)	Dis Metals-see notes (E200.7/200.8/E245.1)	Alkalinity-Total, HCO ₃ , CO ₃ , OH (SM2320B)	Bromide (E300.0)	Chloride (E300.0)	Fluoride (E300.0)	Sulfate (E300.0)							Standard <u>X</u>
EBM Email: anthony.brown@bp.com																										Full Data Package _____
Lab No.	Sample Description	Date	Time																							Comments
	DR3A1307180400	7/18/13	0400	X			3	1		2			X	X	X	X	X	X	X	X						Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description. Dissolved metals samples are field filtered
	DR3A1307190400	7/19/13	0400	X			3	1		2			X	X	X	X	X	X	X	X						
																							</			

Sampler's Name: <u>ABBY CAZIER</u>	Relinquished By / Affiliation: <u>AMEC</u>	Date: <u>7/19/13</u>	Time: <u>1400</u>	Accepted By / Affiliation: <u>[Signature]</u>	Date: <u>7/20/13</u>	Time: <u>920</u>
Sampler's Company: <u>AMEC</u>						
Shipment Method: <u>UPS</u>	Ship Date: <u>7/19/13</u>					
Shipment Tracking No: <u>1Z733W8722 1005 6672</u>						

Special Instructions: _____

THIS LINE - LAB USE ONLY: Custody Seals In Place Yes / No _____ Temp Blank: Yes / No _____ Cooler Temp on Receipt: 21 °F/C _____ Trip Blank: Yes / No _____ MS/MSD Sample Submitted: Yes / No _____

August 15, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: Rico Argentine Mine Site
Pace Project No.: 60149481

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on July 24, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Rico Argentine Mine Site

Pace Project No.: 60149481

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Rico Argentine Mine Site

Pace Project No.: 60149481

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60149481001	DR3A1307200400	Water	07/20/13 04:00	07/24/13 10:20
60149481002	DR3A1307210400	Water	07/21/13 04:00	07/24/13 10:20
60149481003	DR3A1307220400	Water	07/22/13 04:00	07/24/13 10:20
60149481004	DR3A1307230400	Water	07/23/13 04:00	07/24/13 10:20

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Rico Argentine Mine Site

Pace Project No.: 60149481

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60149481001	DR3A1307200400	EPA 200.7	TDS	9
		EPA 200.7	TDS	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60149481002	DR3A1307210400	EPA 200.7	TDS	9
		EPA 200.7	TDS	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60149481003	DR3A1307220400	EPA 200.7	TDS	9
		EPA 200.7	TDS	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60149481004	DR3A1307230400	EPA 200.7	TDS	9
		EPA 200.7	TDS	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico Argentine Mine Site

Pace Project No.: 60149481

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: August 15, 2013

General Information:

4 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23604

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60149481001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1225170)
 - Calcium
- MSD (Lab ID: 1225171)
 - Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico Argentine Mine Site
Pace Project No.: 60149481

Method: EPA 200.7
Description: 200.7 Metals, Dissolved
Client: BP AMEC
Date: August 15, 2013

General Information:

4 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23602

B: Analyte was detected in the associated method blank.

- BLANK for HBN 300006 [MPRP/236 (Lab ID: 1225160)]
- Iron, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23602

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60149481001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1225162)
- Calcium, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico Argentine Mine Site

Pace Project No.: 60149481

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: August 15, 2013

General Information:

4 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23605

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60149481002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1225174)
 - Manganese
- MSD (Lab ID: 1225175)
 - Manganese

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico Argentine Mine Site
Pace Project No.: 60149481

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: August 15, 2013

General Information:

4 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23603

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60149481002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1225167)
- Manganese, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico Argentine Mine Site

Pace Project No.: 60149481

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: August 15, 2013

General Information:

4 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico Argentine Mine Site

Pace Project No.: 60149481

Method: EPA 245.1

Description: 245.1 Mercury, Dissolved

Client: BP AMEC

Date: August 15, 2013

General Information:

4 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico Argentine Mine Site

Pace Project No.: 60149481

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: August 15, 2013

General Information:

4 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico Argentine Mine Site
Pace Project No.: 60149481

Method: EPA 300.0
Description: 300.0 IC Anions 28 Days
Client: BP AMEC
Date: August 15, 2013

General Information:

4 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: WETA/25606

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60149164002,60149481003

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1227411)
 - Bromide
- MSD (Lab ID: 1227412)
 - Bromide

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico Argentine Mine Site

Pace Project No.: 60149481

Sample: DR3A1307200400 Lab ID: 60149481001 Collected: 07/20/13 04:00 Received: 07/24/13 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	759	ug/L	75.0	16.6	1	07/24/13 16:15	07/25/13 14:29	7429-90-5	M1
Calcium	230000	ug/L	100	10.4	1	07/24/13 16:15	07/25/13 14:29	7440-70-2	
Iron	7320	ug/L	50.0	11.6	1	07/24/13 16:15	07/25/13 14:29	7439-89-6	
Lithium	24.9	ug/L	10.0	2.4	1	07/24/13 16:15	07/25/13 14:29	7439-93-2	
Magnesium	19600	ug/L	50.0	6.5	1	07/24/13 16:15	07/25/13 14:29	7439-95-4	
Potassium	3800	ug/L	500	44.4	1	07/24/13 16:15	07/25/13 14:29	7440-09-7	
Silicon	7920	ug/L	500	23.9	1	07/24/13 16:15	07/25/13 14:29	7440-21-3	
Sodium	21500	ug/L	500	21.7	1	07/24/13 16:15	07/25/13 14:29	7440-23-5	
Zinc	3950	ug/L	50.0	3.3	1	07/24/13 16:15	07/25/13 14:29	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	35.9J	ug/L	75.0	16.6	1	07/24/13 16:15	07/25/13 14:55	7429-90-5	M1
Calcium, Dissolved	228000	ug/L	100	10.4	1	07/24/13 16:15	07/25/13 14:55	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	11.6	1	07/24/13 16:15	07/25/13 14:55	7439-89-6	
Lithium, Dissolved	24.2	ug/L	10.0	2.4	1	07/24/13 16:15	07/25/13 14:55	7439-93-2	
Magnesium, Dissolved	19500	ug/L	50.0	6.5	1	07/24/13 16:15	07/25/13 14:55	7439-95-4	
Potassium, Dissolved	3620	ug/L	500	44.4	1	07/24/13 16:15	07/25/13 14:55	7440-09-7	
Silicon, Dissolved	6790	ug/L	500	23.9	1	07/24/13 16:15	07/25/13 14:55	7440-21-3	
Sodium, Dissolved	20700	ug/L	500	21.7	1	07/24/13 16:15	07/25/13 14:55	7440-23-5	
Zinc, Dissolved	3220	ug/L	50.0	3.3	1	07/24/13 16:15	07/25/13 14:55	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.2	ug/L	1.0	0.050	1	07/24/13 16:15	08/09/13 19:07	7440-38-2	
Cadmium	21.0	ug/L	0.50	0.050	1	07/24/13 16:15	08/09/13 19:07	7440-43-9	
Chromium	0.84J	ug/L	1.0	0.070	1	07/24/13 16:15	08/09/13 19:07	7440-47-3	
Cobalt	2.4	ug/L	1.0	0.080	1	07/24/13 16:15	08/09/13 19:07	7440-48-4	
Copper	180	ug/L	1.0	0.12	1	07/24/13 16:15	08/09/13 19:07	7440-50-8	
Lead	13.4	ug/L	1.0	0.030	1	07/24/13 16:15	08/09/13 19:07	7439-92-1	
Manganese	1860	ug/L	1.0	0.14	1	07/24/13 16:15	08/09/13 19:07	7439-96-5	
Nickel	2.9	ug/L	1.0	0.070	1	07/24/13 16:15	08/09/13 19:07	7440-02-0	
Selenium	0.25J	ug/L	1.0	0.14	1	07/24/13 16:15	08/09/13 19:07	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	1.0	0.050	1	07/24/13 16:15	08/11/13 02:46	7440-38-2	D9
Cadmium, Dissolved	17.0	ug/L	0.50	0.050	1	07/24/13 16:15	08/11/13 02:46	7440-43-9	
Chromium, Dissolved	0.36J	ug/L	1.0	0.070	1	07/24/13 16:15	08/11/13 02:46	7440-47-3	
Cobalt, Dissolved	3.8	ug/L	1.0	0.080	1	07/24/13 16:15	08/11/13 02:46	7440-48-4	
Copper, Dissolved	5.7	ug/L	1.0	0.12	1	08/13/13 08:34	08/13/13 16:25	7440-50-8	
Lead, Dissolved	ND	ug/L	1.0	0.030	1	07/24/13 16:15	08/11/13 02:46	7439-92-1	
Manganese, Dissolved	1830	ug/L	1.0	0.14	1	07/24/13 16:15	08/11/13 02:46	7439-96-5	
Nickel, Dissolved	4.2	ug/L	1.0	0.070	1	07/24/13 16:15	08/11/13 02:46	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	07/24/13 16:15	08/11/13 02:46	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/25/13 10:00	07/25/13 12:59	7439-97-6	

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ANALYTICAL RESULTS

Project: Rico Argentine Mine Site

Pace Project No.: 60149481

Sample: DR3A1307200400		Lab ID: 60149481001		Collected: 07/20/13 04:00		Received: 07/24/13 10:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/25/13 10:00	07/25/13 14:16	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	89.2	mg/L	20.0	1.2	1		07/25/13 08:31		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/25/13 08:31		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/25/13 08:31		
Alkalinity, Total as CaCO ₃	89.2	mg/L	20.0	1.2	1		07/25/13 08:31		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.090	1		07/30/13 13:48	24959-67-9	
Chloride	0.97J	mg/L	1.0	0.50	1		07/30/13 13:48	16887-00-6	
Fluoride	2.3	mg/L	0.20	0.047	1		07/30/13 13:48	16984-48-8	
Sulfate	632	mg/L	50.0	8.0	50		07/30/13 13:31	14808-79-8	

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ANALYTICAL RESULTS

Project: Rico Argentine Mine Site

Pace Project No.: 60149481

Sample: DR3A1307210400 Lab ID: 60149481002 Collected: 07/21/13 04:00 Received: 07/24/13 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	787	ug/L	75.0	16.6	1	07/24/13 16:15	07/25/13 14:38	7429-90-5	
Calcium	228000	ug/L	100	10.4	1	07/24/13 16:15	07/25/13 14:38	7440-70-2	
Iron	7420	ug/L	50.0	11.6	1	07/24/13 16:15	07/25/13 14:38	7439-89-6	
Lithium	24.4	ug/L	10.0	2.4	1	07/24/13 16:15	07/25/13 14:38	7439-93-2	
Magnesium	19600	ug/L	50.0	6.5	1	07/24/13 16:15	07/25/13 14:38	7439-95-4	
Potassium	3730	ug/L	500	44.4	1	07/24/13 16:15	07/25/13 14:38	7440-09-7	
Silicon	8000	ug/L	500	23.9	1	07/24/13 16:15	07/25/13 14:38	7440-21-3	
Sodium	21100	ug/L	500	21.7	1	07/24/13 16:15	07/25/13 14:38	7440-23-5	
Zinc	4030	ug/L	50.0	3.3	1	07/24/13 16:15	07/25/13 14:38	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	40.7J	ug/L	75.0	16.6	1	07/24/13 16:15	07/25/13 15:04	7429-90-5	
Calcium, Dissolved	225000	ug/L	100	10.4	1	07/24/13 16:15	07/25/13 15:04	7440-70-2	
Iron, Dissolved	16.0J	ug/L	50.0	11.6	1	07/24/13 16:15	07/25/13 15:04	7439-89-6	B
Lithium, Dissolved	24.2	ug/L	10.0	2.4	1	07/24/13 16:15	07/25/13 15:04	7439-93-2	
Magnesium, Dissolved	19600	ug/L	50.0	6.5	1	07/24/13 16:15	07/25/13 15:04	7439-95-4	
Potassium, Dissolved	3720	ug/L	500	44.4	1	07/24/13 16:15	07/25/13 15:04	7440-09-7	
Silicon, Dissolved	6950	ug/L	500	23.9	1	07/24/13 16:15	07/25/13 15:04	7440-21-3	
Sodium, Dissolved	21100	ug/L	500	21.7	1	07/24/13 16:15	07/25/13 15:04	7440-23-5	
Zinc, Dissolved	3460	ug/L	50.0	3.3	1	07/24/13 16:15	07/25/13 15:04	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.2	ug/L	1.0	0.050	1	07/24/13 16:15	08/09/13 19:11	7440-38-2	
Cadmium	21.8	ug/L	0.50	0.050	1	07/24/13 16:15	08/09/13 19:11	7440-43-9	
Chromium	0.47J	ug/L	1.0	0.070	1	07/24/13 16:15	08/09/13 19:11	7440-47-3	
Cobalt	2.4	ug/L	1.0	0.080	1	07/24/13 16:15	08/09/13 19:11	7440-48-4	
Copper	189	ug/L	1.0	0.12	1	07/24/13 16:15	08/09/13 19:11	7440-50-8	
Lead	13.8	ug/L	1.0	0.030	1	07/24/13 16:15	08/09/13 19:11	7439-92-1	
Manganese	1920	ug/L	1.0	0.14	1	07/24/13 16:15	08/09/13 19:11	7439-96-5	M1
Nickel	2.9	ug/L	1.0	0.070	1	07/24/13 16:15	08/09/13 19:11	7440-02-0	
Selenium	0.15J	ug/L	1.0	0.14	1	07/24/13 16:15	08/09/13 19:11	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	1.0	0.050	1	07/24/13 16:15	08/11/13 02:50	7440-38-2	
Cadmium, Dissolved	18.2	ug/L	0.50	0.050	1	07/24/13 16:15	08/11/13 02:50	7440-43-9	
Chromium, Dissolved	0.080J	ug/L	1.0	0.070	1	07/24/13 16:15	08/11/13 02:50	7440-47-3	
Cobalt, Dissolved	4.1	ug/L	1.0	0.080	1	07/24/13 16:15	08/11/13 02:50	7440-48-4	D9
Copper, Dissolved	7.7	ug/L	1.0	0.12	1	08/13/13 08:34	08/13/13 16:29	7440-50-8	
Lead, Dissolved	ND	ug/L	1.0	0.030	1	07/24/13 16:15	08/11/13 02:50	7439-92-1	
Manganese, Dissolved	1840	ug/L	1.0	0.14	1	07/24/13 16:15	08/11/13 02:50	7439-96-5	M1
Nickel, Dissolved	4.2	ug/L	1.0	0.070	1	07/24/13 16:15	08/11/13 02:50	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	07/24/13 16:15	08/11/13 02:50	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/25/13 10:00	07/25/13 13:01	7439-97-6	

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ANALYTICAL RESULTS

Project: Rico Argentine Mine Site

Pace Project No.: 60149481

Sample: DR3A1307210400		Lab ID: 60149481002		Collected: 07/21/13 04:00		Received: 07/24/13 10:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/25/13 10:00	07/25/13 14:18	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	94.3	mg/L	20.0	1.2	1		07/25/13 08:35		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/25/13 08:35		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/25/13 08:35		
Alkalinity, Total as CaCO ₃	94.3	mg/L	20.0	1.2	1		07/25/13 08:35		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.090	1		07/30/13 14:04	24959-67-9	
Chloride	0.96J	mg/L	1.0	0.50	1		07/30/13 14:04	16887-00-6	
Fluoride	2.3	mg/L	0.20	0.047	1		07/30/13 14:04	16984-48-8	
Sulfate	665	mg/L	50.0	8.0	50		07/30/13 14:20	14808-79-8	

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ANALYTICAL RESULTS

Project: Rico Argentine Mine Site

Pace Project No.: 60149481

Sample: DR3A1307220400 Lab ID: 60149481003 Collected: 07/22/13 04:00 Received: 07/24/13 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	835	ug/L	75.0	16.6	1	07/24/13 16:15	07/25/13 14:40	7429-90-5	
Calcium	228000	ug/L	100	10.4	1	07/24/13 16:15	07/25/13 14:40	7440-70-2	
Iron	8410	ug/L	50.0	11.6	1	07/24/13 16:15	07/25/13 14:40	7439-89-6	
Lithium	25.4	ug/L	10.0	2.4	1	07/24/13 16:15	07/25/13 14:40	7439-93-2	
Magnesium	19500	ug/L	50.0	6.5	1	07/24/13 16:15	07/25/13 14:40	7439-95-4	
Potassium	3700	ug/L	500	44.4	1	07/24/13 16:15	07/25/13 14:40	7440-09-7	
Silicon	8040	ug/L	500	23.9	1	07/24/13 16:15	07/25/13 14:40	7440-21-3	
Sodium	20800	ug/L	500	21.7	1	07/24/13 16:15	07/25/13 14:40	7440-23-5	
Zinc	4010	ug/L	50.0	3.3	1	07/24/13 16:15	07/25/13 14:40	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	30.8J	ug/L	75.0	16.6	1	07/24/13 16:15	07/25/13 15:06	7429-90-5	
Calcium, Dissolved	227000	ug/L	100	10.4	1	07/24/13 16:15	07/25/13 15:06	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	11.6	1	07/24/13 16:15	07/25/13 15:06	7439-89-6	
Lithium, Dissolved	23.4	ug/L	10.0	2.4	1	07/24/13 16:15	07/25/13 15:06	7439-93-2	
Magnesium, Dissolved	19500	ug/L	50.0	6.5	1	07/24/13 16:15	07/25/13 15:06	7439-95-4	
Potassium, Dissolved	3540	ug/L	500	44.4	1	07/24/13 16:15	07/25/13 15:06	7440-09-7	
Silicon, Dissolved	6970	ug/L	500	23.9	1	07/24/13 16:15	07/25/13 15:06	7440-21-3	
Sodium, Dissolved	19800	ug/L	500	21.7	1	07/24/13 16:15	07/25/13 15:06	7440-23-5	
Zinc, Dissolved	3480	ug/L	50.0	3.3	1	07/24/13 16:15	07/25/13 15:06	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.3	ug/L	1.0	0.050	1	07/24/13 16:15	08/09/13 19:27	7440-38-2	
Cadmium	22.0	ug/L	0.50	0.050	1	07/24/13 16:15	08/09/13 19:27	7440-43-9	
Chromium	0.47J	ug/L	1.0	0.070	1	07/24/13 16:15	08/09/13 19:27	7440-47-3	
Cobalt	2.5	ug/L	1.0	0.080	1	07/24/13 16:15	08/09/13 19:27	7440-48-4	
Copper	202	ug/L	1.0	0.12	1	07/24/13 16:15	08/09/13 19:27	7440-50-8	
Lead	14.9	ug/L	1.0	0.030	1	07/24/13 16:15	08/09/13 19:27	7439-92-1	
Manganese	1910	ug/L	1.0	0.14	1	07/24/13 16:15	08/09/13 19:27	7439-96-5	
Nickel	3.1	ug/L	1.0	0.070	1	07/24/13 16:15	08/09/13 19:27	7440-02-0	
Selenium	0.26J	ug/L	1.0	0.14	1	07/24/13 16:15	08/09/13 19:27	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	1.0	0.050	1	07/24/13 16:15	08/11/13 03:06	7440-38-2	
Cadmium, Dissolved	19.0	ug/L	0.50	0.050	1	07/24/13 16:15	08/11/13 03:06	7440-43-9	
Chromium, Dissolved	ND	ug/L	1.0	0.070	1	07/24/13 16:15	08/11/13 03:06	7440-47-3	
Cobalt, Dissolved	3.7	ug/L	1.0	0.080	1	07/24/13 16:15	08/11/13 03:06	7440-48-4	D9
Copper, Dissolved	8.3	ug/L	1.0	0.12	1	08/13/13 08:34	08/13/13 16:34	7440-50-8	
Lead, Dissolved	ND	ug/L	1.0	0.030	1	07/24/13 16:15	08/11/13 03:06	7439-92-1	
Manganese, Dissolved	1810	ug/L	1.0	0.14	1	07/24/13 16:15	08/11/13 03:06	7439-96-5	
Nickel, Dissolved	4.0	ug/L	1.0	0.070	1	07/24/13 16:15	08/11/13 03:06	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	07/24/13 16:15	08/11/13 03:06	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/25/13 10:00	07/25/13 13:03	7439-97-6	

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ANALYTICAL RESULTS

Project: Rico Argentine Mine Site

Pace Project No.: 60149481

Sample: DR3A1307220400		Lab ID: 60149481003		Collected: 07/22/13 04:00		Received: 07/24/13 10:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/25/13 10:00	07/25/13 14:20	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	101	mg/L	20.0	1.2	1		07/25/13 08:43		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/25/13 08:43		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/25/13 08:43		
Alkalinity, Total as CaCO ₃	101	mg/L	20.0	1.2	1		07/25/13 08:43		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.51J	mg/L	1.0	0.090	1		07/30/13 15:42	24959-67-9	
Chloride	0.98J	mg/L	1.0	0.50	1		07/30/13 15:42	16887-00-6	
Fluoride	2.3	mg/L	0.20	0.047	1		07/30/13 15:42	16984-48-8	
Sulfate	647	mg/L	50.0	8.0	50		07/30/13 14:37	14808-79-8	

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ANALYTICAL RESULTS

Project: Rico Argentine Mine Site

Pace Project No.: 60149481

Sample: DR3A1307230400 Lab ID: 60149481004 Collected: 07/23/13 04:00 Received: 07/24/13 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	775	ug/L	75.0	16.6	1	07/24/13 16:15	07/25/13 14:42	7429-90-5	
Calcium	219000	ug/L	100	10.4	1	07/24/13 16:15	07/25/13 14:42	7440-70-2	
Iron	7270	ug/L	50.0	11.6	1	07/24/13 16:15	07/25/13 14:42	7439-89-6	
Lithium	23.7	ug/L	10.0	2.4	1	07/24/13 16:15	07/25/13 14:42	7439-93-2	
Magnesium	18600	ug/L	50.0	6.5	1	07/24/13 16:15	07/25/13 14:42	7439-95-4	
Potassium	3590	ug/L	500	44.4	1	07/24/13 16:15	07/25/13 14:42	7440-09-7	
Silicon	7570	ug/L	500	23.9	1	07/24/13 16:15	07/25/13 14:42	7440-21-3	
Sodium	20000	ug/L	500	21.7	1	07/24/13 16:15	07/25/13 14:42	7440-23-5	
Zinc	3790	ug/L	50.0	3.3	1	07/24/13 16:15	07/25/13 14:42	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	52.8J	ug/L	75.0	16.6	1	07/24/13 16:15	07/25/13 15:09	7429-90-5	
Calcium, Dissolved	227000	ug/L	100	10.4	1	07/24/13 16:15	07/25/13 15:09	7440-70-2	D9
Iron, Dissolved	ND	ug/L	50.0	11.6	1	07/24/13 16:15	07/25/13 15:09	7439-89-6	
Lithium, Dissolved	23.3	ug/L	10.0	2.4	1	07/24/13 16:15	07/25/13 15:09	7439-93-2	
Magnesium, Dissolved	19400	ug/L	50.0	6.5	1	07/24/13 16:15	07/25/13 15:09	7439-95-4	D9
Potassium, Dissolved	3520	ug/L	500	44.4	1	07/24/13 16:15	07/25/13 15:09	7440-09-7	
Silicon, Dissolved	6950	ug/L	500	23.9	1	07/24/13 16:15	07/25/13 15:09	7440-21-3	
Sodium, Dissolved	19400	ug/L	500	21.7	1	07/24/13 16:15	07/25/13 15:09	7440-23-5	
Zinc, Dissolved	3500	ug/L	50.0	3.3	1	07/24/13 16:15	07/25/13 15:09	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.3	ug/L	1.0	0.050	1	07/24/13 16:15	08/09/13 19:32	7440-38-2	
Cadmium	21.0	ug/L	0.50	0.050	1	07/24/13 16:15	08/09/13 19:32	7440-43-9	
Chromium	0.50J	ug/L	1.0	0.070	1	07/24/13 16:15	08/09/13 19:32	7440-47-3	
Cobalt	2.4	ug/L	1.0	0.080	1	07/24/13 16:15	08/09/13 19:32	7440-48-4	
Copper	187	ug/L	1.0	0.12	1	07/24/13 16:15	08/09/13 19:32	7440-50-8	
Lead	14.0	ug/L	1.0	0.030	1	07/24/13 16:15	08/09/13 19:32	7439-92-1	
Manganese	1860	ug/L	1.0	0.14	1	07/24/13 16:15	08/09/13 19:32	7439-96-5	
Nickel	3.1	ug/L	1.0	0.070	1	07/24/13 16:15	08/09/13 19:32	7440-02-0	
Selenium	0.19J	ug/L	1.0	0.14	1	07/24/13 16:15	08/09/13 19:32	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	1.0	0.050	1	07/24/13 16:15	08/11/13 03:10	7440-38-2	
Cadmium, Dissolved	18.5	ug/L	0.50	0.050	1	07/24/13 16:15	08/11/13 03:10	7440-43-9	
Chromium, Dissolved	0.34J	ug/L	1.0	0.070	1	07/24/13 16:15	08/11/13 03:10	7440-47-3	
Cobalt, Dissolved	3.4	ug/L	1.0	0.080	1	07/24/13 16:15	08/11/13 03:10	7440-48-4	D9
Copper, Dissolved	9.1	ug/L	1.0	0.12	1	07/24/13 16:15	08/11/13 03:10	7440-50-8	
Lead, Dissolved	ND	ug/L	1.0	0.030	1	07/24/13 16:15	08/11/13 03:10	7439-92-1	
Manganese, Dissolved	1820	ug/L	1.0	0.14	1	07/24/13 16:15	08/11/13 03:10	7439-96-5	
Nickel, Dissolved	4.2	ug/L	1.0	0.070	1	07/24/13 16:15	08/11/13 03:10	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	07/24/13 16:15	08/11/13 03:10	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/25/13 10:00	07/25/13 13:10	7439-97-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico Argentine Mine Site

Pace Project No.: 60149481

Sample: DR3A1307230400 Lab ID: 60149481004 Collected: 07/23/13 04:00 Received: 07/24/13 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/25/13 10:00	07/25/13 14:27	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	99.5	mg/L	20.0	1.2	1		07/25/13 08:47		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/25/13 08:47		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/25/13 08:47		
Alkalinity, Total as CaCO ₃	99.5	mg/L	20.0	1.2	1		07/25/13 08:47		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	0.49J	mg/L	1.0	0.090	1		07/30/13 16:15	24959-67-9	
Chloride	0.87J	mg/L	1.0	0.50	1		07/30/13 16:15	16887-00-6	
Fluoride	2.1	mg/L	0.20	0.047	1		07/30/13 16:15	16984-48-8	
Sulfate	659	mg/L	50.0	8.0	50		07/30/13 16:32	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico Argentine Mine Site

Pace Project No.: 60149481

QC Batch: MERP/7540

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury

Associated Lab Samples: 60149481001, 60149481002, 60149481003, 60149481004

METHOD BLANK: 1225481

Matrix: Water

Associated Lab Samples: 60149481001, 60149481002, 60149481003, 60149481004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	07/25/13 12:55	

LABORATORY CONTROL SAMPLE: 1225482

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.0	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1225483 1225484

Parameter	Units	60149481003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.8	4.8	94	95	70-130	1	20	

MATRIX SPIKE SAMPLE: 1225485

Parameter	Units	60149481004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	ND	5	4.7	93	70-130	

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QUALITY CONTROL DATA

Project: Rico Argentine Mine Site

Pace Project No.: 60149481

QC Batch: MERP/7541 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury - Dissolved
Associated Lab Samples: 60149481001, 60149481002, 60149481003, 60149481004

METHOD BLANK: 1225486 Matrix: Water
Associated Lab Samples: 60149481001, 60149481002, 60149481003, 60149481004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	07/25/13 13:41	

LABORATORY CONTROL SAMPLE: 1225487

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	4.4	87	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1225488 1225489

Parameter	Units	60149481003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury, Dissolved	ug/L	ND	5	5	4.3	5.2	85	102	70-130	18	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico Argentine Mine Site

Pace Project No.: 60149481

QC Batch: MPRP/23604 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60149481001, 60149481002, 60149481003, 60149481004

METHOD BLANK: 1225168 Matrix: Water

Associated Lab Samples: 60149481001, 60149481002, 60149481003, 60149481004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	07/25/13 14:24	
Calcium	ug/L	ND	100	07/25/13 14:24	
Iron	ug/L	ND	50.0	07/25/13 14:24	
Lithium	ug/L	ND	10.0	07/25/13 14:24	
Magnesium	ug/L	ND	50.0	07/25/13 14:24	
Potassium	ug/L	ND	500	07/25/13 14:24	
Silicon	ug/L	ND	500	07/25/13 14:24	
Sodium	ug/L	ND	500	07/25/13 14:24	
Zinc	ug/L	ND	50.0	07/25/13 14:24	

LABORATORY CONTROL SAMPLE: 1225169

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	9770	98	85-115	
Calcium	ug/L	10000	9000	90	85-115	
Iron	ug/L	10000	9370	94	85-115	
Lithium	ug/L	1000	1080	108	85-115	
Magnesium	ug/L	10000	9750	98	85-115	
Potassium	ug/L	10000	10500	105	85-115	
Silicon	ug/L	5000	4790	96	85-115	
Sodium	ug/L	10000	10500	105	85-115	
Zinc	ug/L	1000	973	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1225170 1225171

Parameter	Units	60149481001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	759	10000	10000	10600	10400	98	97	70-130	1	8	
Calcium	ug/L	230000	10000	10000	230000	231000	4	8	70-130	0	9 M1	
Iron	ug/L	7320	10000	10000	16400	16300	91	90	70-130	0	10	
Lithium	ug/L	24.9	1000	1000	1060	1040	103	102	70-130	2	20	
Magnesium	ug/L	19600	10000	10000	28500	28400	90	88	70-130	1	9	
Potassium	ug/L	3800	10000	10000	13800	13500	99	97	70-130	2	7	
Silicon	ug/L	7920	5000	5000	12300	12300	87	87	70-130	0	5	
Sodium	ug/L	21500	10000	10000	30900	30400	94	89	70-130	2	8	
Zinc	ug/L	3950	1000	1000	4700	4760	76	81	70-130	1	11	

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QUALITY CONTROL DATA

Project: Rico Argentine Mine Site

Pace Project No.: 60149481

QC Batch:	MPRP/23602	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Dissolved
Associated Lab Samples:	60149481001, 60149481002, 60149481003, 60149481004		

METHOD BLANK: 1225160 Matrix: Water

Associated Lab Samples: 60149481001, 60149481002, 60149481003, 60149481004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	07/25/13 14:53	
Calcium, Dissolved	ug/L	75.8J	100	07/25/13 14:53	
Iron, Dissolved	ug/L	15.7J	50.0	07/25/13 14:53	
Lithium, Dissolved	ug/L	ND	10.0	07/25/13 14:53	
Magnesium, Dissolved	ug/L	ND	50.0	07/25/13 14:53	
Potassium, Dissolved	ug/L	ND	500	07/25/13 14:53	
Silicon, Dissolved	ug/L	40.1J	500	07/25/13 14:53	
Sodium, Dissolved	ug/L	93.2J	500	07/25/13 14:53	
Zinc, Dissolved	ug/L	13.1J	50.0	07/25/13 14:53	

LABORATORY CONTROL SAMPLE: 1225161

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	9700	97	85-115	
Calcium, Dissolved	ug/L	10000	8930	89	85-115	
Iron, Dissolved	ug/L	10000	9260	93	85-115	
Lithium, Dissolved	ug/L	1000	1060	106	85-115	
Magnesium, Dissolved	ug/L	10000	9670	97	85-115	
Potassium, Dissolved	ug/L	10000	10300	103	85-115	
Silicon, Dissolved	ug/L	5000	4710	94	85-115	
Sodium, Dissolved	ug/L	10000	10400	104	85-115	
Zinc, Dissolved	ug/L	1000	973	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1225162 1225163

Parameter	Units	60149481001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	35.9J	10000	10000	9820	9730	98	97	70-130	1	8	
Calcium, Dissolved	ug/L	228000	10000	10000	243000	237000	152	89	70-130	3	9	M1
Iron, Dissolved	ug/L	ND	10000	10000	9510	9300	95	93	70-130	2	10	
Lithium, Dissolved	ug/L	24.2	1000	1000	1040	1040	101	101	70-130	0	20	
Magnesium, Dissolved	ug/L	19500	10000	10000	29500	28800	100	93	70-130	3	9	
Potassium, Dissolved	ug/L	3620	10000	10000	13700	13600	100	100	70-130	0	7	
Silicon, Dissolved	ug/L	6790	5000	5000	11700	11500	98	94	70-130	2	5	
Sodium, Dissolved	ug/L	20700	10000	10000	31000	30900	103	102	70-130	0	8	
Zinc, Dissolved	ug/L	3220	1000	1000	4160	4080	93	85	70-130	2	11	

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QUALITY CONTROL DATA

Project: Rico Argentine Mine Site

Pace Project No.: 60149481

QC Batch: MPRP/23605 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60149481001, 60149481002, 60149481003, 60149481004

METHOD BLANK: 1225172 Matrix: Water

Associated Lab Samples: 60149481001, 60149481002, 60149481003, 60149481004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	08/09/13 18:59	
Cadmium	ug/L	ND	0.50	08/09/13 18:59	
Chromium	ug/L	ND	1.0	08/09/13 18:59	
Cobalt	ug/L	ND	1.0	08/09/13 18:59	
Copper	ug/L	ND	1.0	08/09/13 18:59	
Lead	ug/L	0.18J	1.0	08/09/13 18:59	
Manganese	ug/L	ND	1.0	08/09/13 18:59	
Nickel	ug/L	ND	1.0	08/09/13 18:59	
Selenium	ug/L	ND	1.0	08/09/13 18:59	

LABORATORY CONTROL SAMPLE: 1225173

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	40.2	101	85-115	
Cadmium	ug/L	40	39.2	98	85-115	
Chromium	ug/L	40	40.0	100	85-115	
Cobalt	ug/L	40	40.3	101	85-115	
Copper	ug/L	40	40.7	102	85-115	
Lead	ug/L	40	39.2	98	85-115	
Manganese	ug/L	40	40.2	101	85-115	
Nickel	ug/L	40	40.3	101	85-115	
Selenium	ug/L	40	40.0	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1225174 1225175

Parameter	Units	60149481002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	1.2	40	40	42.9	42.8	104	104	70-130	0	20	
Cadmium	ug/L	21.8	40	40	59.9	60.4	95	97	70-130	1	20	
Chromium	ug/L	0.47J	40	40	40.8	41.1	101	102	70-130	1	20	
Cobalt	ug/L	2.4	40	40	42.1	42.4	99	100	70-130	1	20	
Copper	ug/L	189	40	40	224	226	86	93	70-130	1	20	
Lead	ug/L	13.8	40	40	53.9	54.7	100	102	70-130	1	20	
Manganese	ug/L	1920	40	40	1910	1930	-30	15	70-130	1	20 M1	
Nickel	ug/L	2.9	40	40	41.5	41.8	96	97	70-130	1	20	
Selenium	ug/L	0.15J	40	40	39.4	40.2	98	100	70-130	2	20	

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QUALITY CONTROL DATA

Project: Rico Argentine Mine Site

Pace Project No.: 60149481

QC Batch: MPRP/23603 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60149481001, 60149481002, 60149481003, 60149481004

METHOD BLANK: 1225164 Matrix: Water

Associated Lab Samples: 60149481001, 60149481002, 60149481003, 60149481004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	08/11/13 02:37	
Cadmium, Dissolved	ug/L	ND	0.50	08/11/13 02:37	
Chromium, Dissolved	ug/L	ND	1.0	08/11/13 02:37	
Cobalt, Dissolved	ug/L	0.11J	1.0	08/11/13 02:37	
Copper, Dissolved	ug/L	0.90J	1.0	08/11/13 02:37	
Lead, Dissolved	ug/L	0.39J	1.0	08/11/13 02:37	
Manganese, Dissolved	ug/L	1.1	1.0	08/11/13 02:37	
Nickel, Dissolved	ug/L	0.16J	1.0	08/11/13 02:37	
Selenium, Dissolved	ug/L	ND	1.0	08/11/13 02:37	

LABORATORY CONTROL SAMPLE: 1225165

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	39.1	98	85-115	
Cadmium, Dissolved	ug/L	40	39.9	100	85-115	
Chromium, Dissolved	ug/L	40	39.0	98	85-115	
Cobalt, Dissolved	ug/L	40	39.1	98	85-115	
Copper, Dissolved	ug/L	40	40.0	100	85-115	
Lead, Dissolved	ug/L	40	39.2	98	85-115	
Manganese, Dissolved	ug/L	40	39.0	98	85-115	
Nickel, Dissolved	ug/L	40	38.6	96	85-115	
Selenium, Dissolved	ug/L	40	39.4	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1225166 1225167

Parameter	Units	60149481002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	ND	40	40	40.4	39.7	101	99	70-130	2	20	
Cadmium, Dissolved	ug/L	18.2	40	40	56.9	56.3	97	95	70-130	1	20	
Chromium, Dissolved	ug/L	0.080J	40	40	38.8	38.0	97	95	70-130	2	20	
Cobalt, Dissolved	ug/L	4.1	40	40	41.8	40.9	94	92	70-130	2	20	
Lead, Dissolved	ug/L	ND	40	40	40.0	39.2	100	98	70-130	2	20	
Manganese, Dissolved	ug/L	1840	40	40	1890	1820	112	-40	70-130	3	20 M1	
Nickel, Dissolved	ug/L	4.2	40	40	41.2	40.4	92	90	70-130	2	20	
Selenium, Dissolved	ug/L	ND	40	40	40.1	39.1	100	98	70-130	3	20	

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QUALITY CONTROL DATA

Project: Rico Argentine Mine Site

Pace Project No.: 60149481

QC Batch: MPRP/23813 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60149481001, 60149481002, 60149481003

METHOD BLANK: 1235274 Matrix: Water

Associated Lab Samples: 60149481001, 60149481002, 60149481003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Copper, Dissolved	ug/L	ND	1.0	08/13/13 16:17	

LABORATORY CONTROL SAMPLE: 1235275

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper, Dissolved	ug/L	40	41.7	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1235276 1235277

Parameter	Units	60149481003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Copper, Dissolved	ug/L	8.3	40	40	45.0	46.2	92	95	70-130	3	20	

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QUALITY CONTROL DATA

Project: Rico Argentine Mine Site

Pace Project No.: 60149481

QC Batch: WET/42534 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60149481001, 60149481002, 60149481003, 60149481004

METHOD BLANK: 1225305 Matrix: Water

Associated Lab Samples: 60149481001, 60149481002, 60149481003, 60149481004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	07/25/13 08:27	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	07/25/13 08:27	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	07/25/13 08:27	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	07/25/13 08:27	

LABORATORY CONTROL SAMPLE: 1225306

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	478	96	90-110	

SAMPLE DUPLICATE: 1225309

Parameter	Units	60149481002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	94.3	93.4	1	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	94.3	93.4	1	10	

SAMPLE DUPLICATE: 1225376

Parameter	Units	60149440001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	ND	ND		10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	ND		10	

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QUALITY CONTROL DATA

Project: Rico Argentine Mine Site

Pace Project No.: 60149481

QC Batch: WETA/25606 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60149481001, 60149481002, 60149481003, 60149481004

METHOD BLANK: 1227409 Matrix: Water

Associated Lab Samples: 60149481001, 60149481002, 60149481003, 60149481004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	07/30/13 09:58	
Chloride	mg/L	ND	1.0	07/30/13 09:58	
Fluoride	mg/L	ND	0.20	07/30/13 09:58	
Sulfate	mg/L	ND	1.0	07/30/13 09:58	

LABORATORY CONTROL SAMPLE: 1227410

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.1	101	90-110	
Chloride	mg/L	5	4.9	98	90-110	
Fluoride	mg/L	2.5	2.5	98	90-110	
Sulfate	mg/L	5	4.9	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1227411 1227412

Parameter	Units	60149164002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	ND	5	5	2.9	2.9	40	41	75-119	1	10	M1
Chloride	mg/L	353	250	250	564	557	84	82	64-118	1	12	
Fluoride	mg/L	3.1	2.5	2.5	5.8	5.8	107	109	75-110	1	10	
Sulfate	mg/L	354	250	250	570	567	86	85	61-119	0	10	

MATRIX SPIKE SAMPLE: 1227413

Parameter	Units	60149481003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	0.51J	5	5.4	97	75-119	
Chloride	mg/L	0.98J	5	5.3	86	64-118	
Fluoride	mg/L	2.3	2.5	4.6	92	75-110	
Sulfate	mg/L	647	250	891	98	61-119	

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QUALIFIERS

Project: Rico Argentine Mine Site

Pace Project No.: 60149481

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rico Argentine Mine Site

Pace Project No.: 60149481

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60149481001	DR3A1307200400	EPA 200.7	MPRP/23604	EPA 200.7	ICP/18530
60149481002	DR3A1307210400	EPA 200.7	MPRP/23604	EPA 200.7	ICP/18530
60149481003	DR3A1307220400	EPA 200.7	MPRP/23604	EPA 200.7	ICP/18530
60149481004	DR3A1307230400	EPA 200.7	MPRP/23604	EPA 200.7	ICP/18530
60149481001	DR3A1307200400	EPA 200.7	MPRP/23602	EPA 200.7	ICP/18529
60149481002	DR3A1307210400	EPA 200.7	MPRP/23602	EPA 200.7	ICP/18529
60149481003	DR3A1307220400	EPA 200.7	MPRP/23602	EPA 200.7	ICP/18529
60149481004	DR3A1307230400	EPA 200.7	MPRP/23602	EPA 200.7	ICP/18529
60149481001	DR3A1307200400	EPA 200.8	MPRP/23605	EPA 200.8	ICPM/2410
60149481002	DR3A1307210400	EPA 200.8	MPRP/23605	EPA 200.8	ICPM/2410
60149481003	DR3A1307220400	EPA 200.8	MPRP/23605	EPA 200.8	ICPM/2410
60149481004	DR3A1307230400	EPA 200.8	MPRP/23605	EPA 200.8	ICPM/2410
60149481001	DR3A1307200400	EPA 200.8	MPRP/23603	EPA 200.8	ICPM/2409
60149481001	DR3A1307200400	EPA 200.8	MPRP/23813	EPA 200.8	ICPM/2441
60149481002	DR3A1307210400	EPA 200.8	MPRP/23603	EPA 200.8	ICPM/2409
60149481002	DR3A1307210400	EPA 200.8	MPRP/23813	EPA 200.8	ICPM/2441
60149481003	DR3A1307220400	EPA 200.8	MPRP/23603	EPA 200.8	ICPM/2409
60149481003	DR3A1307220400	EPA 200.8	MPRP/23813	EPA 200.8	ICPM/2441
60149481004	DR3A1307230400	EPA 200.8	MPRP/23603	EPA 200.8	ICPM/2409
60149481001	DR3A1307200400	EPA 245.1	MERP/7540	EPA 245.1	MERC/7497
60149481002	DR3A1307210400	EPA 245.1	MERP/7540	EPA 245.1	MERC/7497
60149481003	DR3A1307220400	EPA 245.1	MERP/7540	EPA 245.1	MERC/7497
60149481004	DR3A1307230400	EPA 245.1	MERP/7540	EPA 245.1	MERC/7497
60149481001	DR3A1307200400	EPA 245.1	MERP/7541	EPA 245.1	MERC/7498
60149481002	DR3A1307210400	EPA 245.1	MERP/7541	EPA 245.1	MERC/7498
60149481003	DR3A1307220400	EPA 245.1	MERP/7541	EPA 245.1	MERC/7498
60149481004	DR3A1307230400	EPA 245.1	MERP/7541	EPA 245.1	MERC/7498
60149481001	DR3A1307200400	SM 2320B	WET/42534		
60149481002	DR3A1307210400	SM 2320B	WET/42534		
60149481003	DR3A1307220400	SM 2320B	WET/42534		
60149481004	DR3A1307230400	SM 2320B	WET/42534		
60149481001	DR3A1307200400	EPA 300.0	WETA/25606		
60149481002	DR3A1307210400	EPA 300.0	WETA/25606		
60149481003	DR3A1307220400	EPA 300.0	WETA/25606		
60149481004	DR3A1307230400	EPA 300.0	WETA/25606		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt
ESI Tech Spec Client

WO#: 60149481



60149481

Client Name: BP AMEC

Optional

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Proj Due Date:

Tracking #: 1Z133W848449614353,358765 Pace Shipping Label Used? Yes ☐ No ☒

Proj Name:

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other A291C

Thermometer Used: T-112 / T-194

Type of Ice: Wet Blue ☐ None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 1.3/29

Date and initials of person examining contents: pc 7/24/13

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12 <u>pc 7/24/13</u>
Sample labels match COC:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses Matrix:	<u>WT</u>	13.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:

Client Notification/ Resolution:

Copy COC to Client? Y / N

Field Data Required? Y / N

Person Contacted: _____

Date/Time: _____

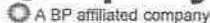
Comments/ Resolution: _____

Project Manager Review: edmw

Date: 7/24/13

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: <u>1113</u>	Start:
End: <u>1117</u>	End:
Temp:	Temp:



Rush TAT: Yes ☒ No ☐

Lab Work Order Number:

BP/ARC LaMP COC Rev. 6 01/01/2009

August 13, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: Rico Argentine Mine Site
Pace Project No.: 60149482

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on July 24, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Rico Argentine Mine Site

Pace Project No.: 60149482

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

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SAMPLE SUMMARY

Project: Rico Argentine Mine Site

Pace Project No.: 60149482

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60149482001	517SHAFT465130720	Water	07/20/13 09:40	07/24/13 10:20

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SAMPLE ANALYTE COUNT

Project: Rico Argentine Mine Site

Pace Project No.: 60149482

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60149482001	517SHAFT465130720	EPA 200.7	TDS	9
		EPA 200.7	TDS	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico Argentine Mine Site

Pace Project No.: 60149482

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: August 13, 2013

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23604

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60149481001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1225170)
 - Calcium
- MSD (Lab ID: 1225171)
 - Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico Argentine Mine Site

Pace Project No.: 60149482

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: August 13, 2013

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23602

B: Analyte was detected in the associated method blank.

- BLANK for HBN 300006 [MPRP/236 (Lab ID: 1225160)]
 - Iron, Dissolved
 - Zinc, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23602

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60149481001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1225162)
 - Calcium, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico Argentine Mine Site

Pace Project No.: 60149482

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: August 13, 2013

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23605

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60149481002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1225174)
 - Manganese
- MSD (Lab ID: 1225175)
 - Manganese

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico Argentine Mine Site

Pace Project No.: 60149482

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: August 13, 2013

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23603

B: Analyte was detected in the associated method blank.

- BLANK for HBN 300008 [MPRP/236 (Lab ID: 1225164)]
 - Cobalt, Dissolved
 - Lead, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23603

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60149481002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1225167)
 - Manganese, Dissolved

Additional Comments:

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PROJECT NARRATIVE

Project: Rico Argentine Mine Site

Pace Project No.: 60149482

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: August 13, 2013

General Information:

1 sample was analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico Argentine Mine Site

Pace Project No.: 60149482

Method: EPA 245.1

Description: 245.1 Mercury, Dissolved

Client: BP AMEC

Date: August 13, 2013

General Information:

1 sample was analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico Argentine Mine Site

Pace Project No.: 60149482

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: August 13, 2013

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico Argentine Mine Site

Pace Project No.: 60149482

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: August 13, 2013

General Information:

1 sample was analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: WETA/25606

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60149164002,60149481003

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1227411)
 - Bromide
- MSD (Lab ID: 1227412)
 - Bromide

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico Argentine Mine Site

Pace Project No.: 60149482

Sample: 517SHAFT465130720 Lab ID: 60149482001 Collected: 07/20/13 09:40 Received: 07/24/13 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	34.2J	ug/L	75.0	16.6	1	07/24/13 16:15	07/25/13 14:44	7429-90-5	
Calcium	32800	ug/L	100	10.4	1	07/24/13 16:15	07/25/13 14:44	7440-70-2	
Iron	777	ug/L	50.0	11.6	1	07/24/13 16:15	07/25/13 14:44	7439-89-6	
Lithium	21.0	ug/L	10.0	2.4	1	07/24/13 16:15	07/25/13 14:44	7439-93-2	
Magnesium	8030	ug/L	50.0	6.5	1	07/24/13 16:15	07/25/13 14:44	7439-95-4	
Potassium	29300	ug/L	500	44.4	1	07/24/13 16:15	07/25/13 14:44	7440-09-7	
Silicon	3210	ug/L	500	23.9	1	07/24/13 16:15	07/25/13 14:44	7440-21-3	
Sodium	209000	ug/L	500	21.7	1	07/24/13 16:15	07/25/13 14:44	7440-23-5	
Zinc	430	ug/L	50.0	3.3	1	07/24/13 16:15	07/25/13 14:44	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	31.2J	ug/L	75.0	16.6	1	07/24/13 16:15	07/25/13 15:11	7429-90-5	
Calcium, Dissolved	32000	ug/L	100	10.4	1	07/24/13 16:15	07/25/13 15:11	7440-70-2	
Iron, Dissolved	28.7J	ug/L	50.0	11.6	1	07/24/13 16:15	07/25/13 15:11	7439-89-6	B
Lithium, Dissolved	19.6	ug/L	10.0	2.4	1	07/24/13 16:15	07/25/13 15:11	7439-93-2	
Magnesium, Dissolved	8100	ug/L	50.0	6.5	1	07/24/13 16:15	07/25/13 15:11	7439-95-4	D9
Potassium, Dissolved	28100	ug/L	500	44.4	1	07/24/13 16:15	07/25/13 15:11	7440-09-7	
Silicon, Dissolved	3070	ug/L	500	23.9	1	07/24/13 16:15	07/25/13 15:11	7440-21-3	
Sodium, Dissolved	198000	ug/L	500	21.7	1	07/24/13 16:15	07/25/13 15:11	7440-23-5	
Zinc, Dissolved	55.4	ug/L	50.0	3.3	1	07/24/13 16:15	07/25/13 15:11	7440-66-6	B
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	0.50J	ug/L	1.0	0.050	1	07/24/13 16:15	08/09/13 19:36	7440-38-2	
Cadmium	0.61	ug/L	0.50	0.050	1	07/24/13 16:15	08/09/13 19:36	7440-43-9	
Chromium	12.2	ug/L	1.0	0.070	1	07/24/13 16:15	08/09/13 19:36	7440-47-3	
Cobalt	0.56J	ug/L	1.0	0.080	1	07/24/13 16:15	08/09/13 19:36	7440-48-4	
Copper	15.2	ug/L	1.0	0.12	1	07/24/13 16:15	08/09/13 19:36	7440-50-8	
Lead	2.2	ug/L	1.0	0.030	1	07/24/13 16:15	08/09/13 19:36	7439-92-1	
Manganese	537	ug/L	1.0	0.14	1	07/24/13 16:15	08/09/13 19:36	7439-96-5	
Nickel	2.3	ug/L	1.0	0.070	1	07/24/13 16:15	08/09/13 19:36	7440-02-0	
Selenium	0.44J	ug/L	1.0	0.14	1	07/24/13 16:15	08/09/13 19:36	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.11J	ug/L	1.0	0.050	1	07/24/13 16:15	08/11/13 03:15	7440-38-2	
Cadmium, Dissolved	ND	ug/L	0.50	0.050	1	07/24/13 16:15	08/11/13 03:15	7440-43-9	
Chromium, Dissolved	0.96J	ug/L	1.0	0.070	1	07/24/13 16:15	08/11/13 03:15	7440-47-3	
Cobalt, Dissolved	1.1	ug/L	1.0	0.080	1	07/24/13 16:15	08/11/13 03:15	7440-48-4	B,D9
Copper, Dissolved	10.2	ug/L	1.0	0.12	1	07/24/13 16:15	08/11/13 03:15	7440-50-8	
Lead, Dissolved	0.12J	ug/L	1.0	0.030	1	07/24/13 16:15	08/11/13 03:15	7439-92-1	B
Manganese, Dissolved	344	ug/L	1.0	0.14	1	07/24/13 16:15	08/11/13 03:15	7439-96-5	
Nickel, Dissolved	1.7	ug/L	1.0	0.070	1	07/24/13 16:15	08/11/13 03:15	7440-02-0	
Selenium, Dissolved	0.25J	ug/L	1.0	0.14	1	07/24/13 16:15	08/11/13 03:15	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/25/13 10:00	07/25/13 13:15	7439-97-6	

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ANALYTICAL RESULTS

Project: Rico Argentine Mine Site

Pace Project No.: 60149482

Sample: 517SHAFT465130720 Lab ID: 60149482001 Collected: 07/20/13 09:40 Received: 07/24/13 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/25/13 10:00	07/25/13 14:29	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	121	mg/L	20.0	1.2	1		07/25/13 08:52		
Alkalinity, Carbonate (CaCO ₃)	94.5	mg/L	20.0	1.2	1		07/25/13 08:52		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/25/13 08:52		
Alkalinity, Total as CaCO ₃	216	mg/L	20.0	1.2	1		07/25/13 08:52		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	0.48J	mg/L	1.0	0.090	1		07/30/13 17:04	24959-67-9	
Chloride	1.0	mg/L	1.0	0.50	1		07/30/13 17:04	16887-00-6	
Fluoride	1.9	mg/L	0.20	0.047	1		07/30/13 17:04	16984-48-8	
Sulfate	389	mg/L	50.0	8.0	50		07/30/13 16:48	14808-79-8	

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QUALITY CONTROL DATA

Project: Rico Argentine Mine Site
Pace Project No.: 60149482

QC Batch: MERP/7540 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60149482001

METHOD BLANK: 1225481 Matrix: Water
Associated Lab Samples: 60149482001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	07/25/13 12:55	

LABORATORY CONTROL SAMPLE: 1225482

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.0	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1225483 1225484

Parameter	Units	60149481003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.8	4.8	94	95	70-130	1	20	

MATRIX SPIKE SAMPLE: 1225485

Parameter	Units	60149481004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	ND	5	4.7	93	70-130	

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QUALITY CONTROL DATA

Project: Rico Argentine Mine Site

Pace Project No.: 60149482

QC Batch: MERP/7541

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury - Dissolved

Associated Lab Samples: 60149482001

METHOD BLANK: 1225486

Matrix: Water

Associated Lab Samples: 60149482001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	07/25/13 13:41	

LABORATORY CONTROL SAMPLE: 1225487

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	4.4	87	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1225488 1225489

Parameter	Units	60149481003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury, Dissolved	ug/L	ND	5	5	4.3	5.2	85	102	70-130	18	20	

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QUALITY CONTROL DATA

Project: Rico Argentine Mine Site
Pace Project No.: 60149482

QC Batch: MPRP/23604 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60149482001

METHOD BLANK: 1225168 Matrix: Water
Associated Lab Samples: 60149482001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	07/25/13 14:24	
Calcium	ug/L	ND	100	07/25/13 14:24	
Iron	ug/L	ND	50.0	07/25/13 14:24	
Lithium	ug/L	ND	10.0	07/25/13 14:24	
Magnesium	ug/L	ND	50.0	07/25/13 14:24	
Potassium	ug/L	ND	500	07/25/13 14:24	
Silicon	ug/L	ND	500	07/25/13 14:24	
Sodium	ug/L	ND	500	07/25/13 14:24	
Zinc	ug/L	ND	50.0	07/25/13 14:24	

LABORATORY CONTROL SAMPLE: 1225169

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	9770	98	85-115	
Calcium	ug/L	10000	9000	90	85-115	
Iron	ug/L	10000	9370	94	85-115	
Lithium	ug/L	1000	1080	108	85-115	
Magnesium	ug/L	10000	9750	98	85-115	
Potassium	ug/L	10000	10500	105	85-115	
Silicon	ug/L	5000	4790	96	85-115	
Sodium	ug/L	10000	10500	105	85-115	
Zinc	ug/L	1000	973	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1225170 1225171

Parameter	Units	60149481001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	759	10000	10000	10600	10400	98	97	70-130	1	8	
Calcium	ug/L	230000	10000	10000	230000	231000	4	8	70-130	0	9 M1	
Iron	ug/L	7320	10000	10000	16400	16300	91	90	70-130	0	10	
Lithium	ug/L	24.9	1000	1000	1060	1040	103	102	70-130	2	20	
Magnesium	ug/L	19600	10000	10000	28500	28400	90	88	70-130	1	9	
Potassium	ug/L	3800	10000	10000	13800	13500	99	97	70-130	2	7	
Silicon	ug/L	7920	5000	5000	12300	12300	87	87	70-130	0	5	
Sodium	ug/L	21500	10000	10000	30900	30400	94	89	70-130	2	8	
Zinc	ug/L	3950	1000	1000	4700	4760	76	81	70-130	1	11	

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QUALITY CONTROL DATA

Project: Rico Argentine Mine Site
Pace Project No.: 60149482

QC Batch: MPRP/23602 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Dissolved
Associated Lab Samples: 60149482001

METHOD BLANK: 1225160 Matrix: Water
Associated Lab Samples: 60149482001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	07/25/13 14:53	
Calcium, Dissolved	ug/L	75.8J	100	07/25/13 14:53	
Iron, Dissolved	ug/L	15.7J	50.0	07/25/13 14:53	
Lithium, Dissolved	ug/L	ND	10.0	07/25/13 14:53	
Magnesium, Dissolved	ug/L	ND	50.0	07/25/13 14:53	
Potassium, Dissolved	ug/L	ND	500	07/25/13 14:53	
Silicon, Dissolved	ug/L	40.1J	500	07/25/13 14:53	
Sodium, Dissolved	ug/L	93.2J	500	07/25/13 14:53	
Zinc, Dissolved	ug/L	13.1J	50.0	07/25/13 14:53	

LABORATORY CONTROL SAMPLE: 1225161

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	9700	97	85-115	
Calcium, Dissolved	ug/L	10000	8930	89	85-115	
Iron, Dissolved	ug/L	10000	9260	93	85-115	
Lithium, Dissolved	ug/L	1000	1060	106	85-115	
Magnesium, Dissolved	ug/L	10000	9670	97	85-115	
Potassium, Dissolved	ug/L	10000	10300	103	85-115	
Silicon, Dissolved	ug/L	5000	4710	94	85-115	
Sodium, Dissolved	ug/L	10000	10400	104	85-115	
Zinc, Dissolved	ug/L	1000	973	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1225162 1225163

Parameter	Units	60149481001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	35.9J	10000	10000	9820	9730	98	97	70-130	1	8	
Calcium, Dissolved	ug/L	228000	10000	10000	243000	237000	152	89	70-130	3	9 M1	
Iron, Dissolved	ug/L	ND	10000	10000	9510	9300	95	93	70-130	2	10	
Lithium, Dissolved	ug/L	24.2	1000	1000	1040	1040	101	101	70-130	0	20	
Magnesium, Dissolved	ug/L	19500	10000	10000	29500	28800	100	93	70-130	3	9	
Potassium, Dissolved	ug/L	3620	10000	10000	13700	13600	100	100	70-130	0	7	
Silicon, Dissolved	ug/L	6790	5000	5000	11700	11500	98	94	70-130	2	5	
Sodium, Dissolved	ug/L	20700	10000	10000	31000	30900	103	102	70-130	0	8	
Zinc, Dissolved	ug/L	3220	1000	1000	4160	4080	93	85	70-130	2	11	

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QUALITY CONTROL DATA

Project: Rico Argentine Mine Site
Pace Project No.: 60149482

QC Batch: MPRP/23605 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60149482001

METHOD BLANK: 1225172 Matrix: Water
Associated Lab Samples: 60149482001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	08/09/13 18:59	
Cadmium	ug/L	ND	0.50	08/09/13 18:59	
Chromium	ug/L	ND	1.0	08/09/13 18:59	
Cobalt	ug/L	ND	1.0	08/09/13 18:59	
Copper	ug/L	ND	1.0	08/09/13 18:59	
Lead	ug/L	0.18J	1.0	08/09/13 18:59	
Manganese	ug/L	ND	1.0	08/09/13 18:59	
Nickel	ug/L	ND	1.0	08/09/13 18:59	
Selenium	ug/L	ND	1.0	08/09/13 18:59	

LABORATORY CONTROL SAMPLE: 1225173

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	40.2	101	85-115	
Cadmium	ug/L	40	39.2	98	85-115	
Chromium	ug/L	40	40.0	100	85-115	
Cobalt	ug/L	40	40.3	101	85-115	
Copper	ug/L	40	40.7	102	85-115	
Lead	ug/L	40	39.2	98	85-115	
Manganese	ug/L	40	40.2	101	85-115	
Nickel	ug/L	40	40.3	101	85-115	
Selenium	ug/L	40	40.0	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1225174 1225175

Parameter	Units	60149481002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	1.2	40	40	42.9	42.8	104	104	70-130	0	20	
Cadmium	ug/L	21.8	40	40	59.9	60.4	95	97	70-130	1	20	
Chromium	ug/L	0.47J	40	40	40.8	41.1	101	102	70-130	1	20	
Cobalt	ug/L	2.4	40	40	42.1	42.4	99	100	70-130	1	20	
Copper	ug/L	189	40	40	224	226	86	93	70-130	1	20	
Lead	ug/L	13.8	40	40	53.9	54.7	100	102	70-130	1	20	
Manganese	ug/L	1920	40	40	1910	1930	-30	15	70-130	1	20 M1	
Nickel	ug/L	2.9	40	40	41.5	41.8	96	97	70-130	1	20	
Selenium	ug/L	0.15J	40	40	39.4	40.2	98	100	70-130	2	20	

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QUALITY CONTROL DATA

Project: Rico Argentine Mine Site
Pace Project No.: 60149482

QC Batch: MPRP/23603 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60149482001

METHOD BLANK: 1225164 Matrix: Water
Associated Lab Samples: 60149482001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	08/11/13 02:37	
Cadmium, Dissolved	ug/L	ND	0.50	08/11/13 02:37	
Chromium, Dissolved	ug/L	ND	1.0	08/11/13 02:37	
Cobalt, Dissolved	ug/L	0.11J	1.0	08/11/13 02:37	
Copper, Dissolved	ug/L	0.90J	1.0	08/11/13 02:37	
Lead, Dissolved	ug/L	0.39J	1.0	08/11/13 02:37	
Manganese, Dissolved	ug/L	1.1	1.0	08/11/13 02:37	
Nickel, Dissolved	ug/L	0.16J	1.0	08/11/13 02:37	
Selenium, Dissolved	ug/L	ND	1.0	08/11/13 02:37	

LABORATORY CONTROL SAMPLE: 1225165

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	39.1	98	85-115	
Cadmium, Dissolved	ug/L	40	39.9	100	85-115	
Chromium, Dissolved	ug/L	40	39.0	98	85-115	
Cobalt, Dissolved	ug/L	40	39.1	98	85-115	
Copper, Dissolved	ug/L	40	40.0	100	85-115	
Lead, Dissolved	ug/L	40	39.2	98	85-115	
Manganese, Dissolved	ug/L	40	39.0	98	85-115	
Nickel, Dissolved	ug/L	40	38.6	96	85-115	
Selenium, Dissolved	ug/L	40	39.4	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1225166 1225167

Parameter	Units	60149481002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	ND	40	40	40.4	39.7	101	99	70-130	2	20	
Cadmium, Dissolved	ug/L	18.2	40	40	56.9	56.3	97	95	70-130	1	20	
Chromium, Dissolved	ug/L	0.080J	40	40	38.8	38.0	97	95	70-130	2	20	
Cobalt, Dissolved	ug/L	4.1	40	40	41.8	40.9	94	92	70-130	2	20	
Copper, Dissolved	ug/L	189			43.4	42.2				3	20	
Lead, Dissolved	ug/L	ND	40	40	40.0	39.2	100	98	70-130	2	20	
Manganese, Dissolved	ug/L	1840	40	40	1890	1820	112	-40	70-130	3	20 M1	
Nickel, Dissolved	ug/L	4.2	40	40	41.2	40.4	92	90	70-130	2	20	
Selenium, Dissolved	ug/L	ND	40	40	40.1	39.1	100	98	70-130	3	20	

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QUALITY CONTROL DATA

Project: Rico Argentine Mine Site

Pace Project No.: 60149482

QC Batch: WET/42534

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60149482001

METHOD BLANK: 1225305

Matrix: Water

Associated Lab Samples: 60149482001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	07/25/13 08:27	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	07/25/13 08:27	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	07/25/13 08:27	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	07/25/13 08:27	

LABORATORY CONTROL SAMPLE: 1225306

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	478	96	90-110	

SAMPLE DUPLICATE: 1225309

Parameter	Units	60149481002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	94.3	93.4	1	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	94.3	93.4	1	10	

SAMPLE DUPLICATE: 1225376

Parameter	Units	60149440001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	ND	ND		10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	ND		10	

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QUALITY CONTROL DATA

Project: Rico Argentine Mine Site
Pace Project No.: 60149482

QC Batch: WETA/25606 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60149482001

METHOD BLANK: 1227409 Matrix: Water
Associated Lab Samples: 60149482001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	07/30/13 09:58	
Chloride	mg/L	ND	1.0	07/30/13 09:58	
Fluoride	mg/L	ND	0.20	07/30/13 09:58	
Sulfate	mg/L	ND	1.0	07/30/13 09:58	

LABORATORY CONTROL SAMPLE: 1227410

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.1	101	90-110	
Chloride	mg/L	5	4.9	98	90-110	
Fluoride	mg/L	2.5	2.5	98	90-110	
Sulfate	mg/L	5	4.9	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1227411 1227412

Parameter	Units	60149164002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	ND	5	5	2.9	2.9	40	41	75-119	1	10	M1
Chloride	mg/L	353	250	250	564	557	84	82	64-118	1	12	
Fluoride	mg/L	3.1	2.5	2.5	5.8	5.8	107	109	75-110	1	10	
Sulfate	mg/L	354	250	250	570	567	86	85	61-119	0	10	

MATRIX SPIKE SAMPLE: 1227413

Parameter	Units	60149481003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	0.51J	5	5.4	97	75-119	
Chloride	mg/L	0.98J	5	5.3	86	64-118	
Fluoride	mg/L	2.3	2.5	4.6	92	75-110	
Sulfate	mg/L	647	250	891	98	61-119	

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QUALIFIERS

Project: Rico Argentine Mine Site

Pace Project No.: 60149482

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rico Argentine Mine Site

Pace Project No.: 60149482

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60149482001	517SHAFT465130720	EPA 200.7	MPRP/23604	EPA 200.7	ICP/18530
60149482001	517SHAFT465130720	EPA 200.7	MPRP/23602	EPA 200.7	ICP/18529
60149482001	517SHAFT465130720	EPA 200.8	MPRP/23605	EPA 200.8	ICPM/2410
60149482001	517SHAFT465130720	EPA 200.8	MPRP/23603	EPA 200.8	ICPM/2409
60149482001	517SHAFT465130720	EPA 245.1	MERP/7540	EPA 245.1	MERC/7497
60149482001	517SHAFT465130720	EPA 245.1	MERP/7541	EPA 245.1	MERC/7498
60149482001	517SHAFT465130720	SM 2320B	WET/42534		
60149482001	517SHAFT465130720	EPA 300.0	WETA/25606		

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Sample Condition Upon Receipt
ESI Tech Spec Client

WO#: 60149482



Client Name: BP AMEC

Optional
Proj Due Date:
Proj Name:

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 1Z733W8404435B765 Pace Shipping Label Used? Yes ☐ No ☒

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☒ 12PIC

Thermometer Used: T-112 / T-194

Type of Ice: Wei Blue ☐ None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 1.3

Date and initials of person examining contents: PC 7/24/13

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses	Matrix: <u>WT</u>	13.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:

Client Notification/ Resolution:

Copy COC to Client? Y ☒ N

Field Data Required? Y / N

Person Contacted: _____

Date/Time: _____

Comments/ Resolution: _____

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: <u>1105</u>	Start:
End: <u>1100</u>	End:
Temp:	Temp:

Project Manager Review: [Signature]

Date: 7/24/13



Laboratory Management Program LaMP Chain of Custody Record

Page 1 of 1BP/ARC Project Name: Rico-Argentine Mine SiteReq Due Date (mm/dd/yy): _____ Rush TAT: Yes X No _____

BP/ARC Facility No: _____

Lab Work Order Number: _____

Lab Name: Pace Analytical Laboratories, Inc.				BP/ARC Facility Address: Rico-Argentine Mine				Consultant/Contractor: AMEC E&I, Inc.													
Lab Address: 9608 Loiret Blvd., Lenexa, KS 66219				City, State, ZIP Code: Rico, Colorado				Consultant/Contractor Project No: SA11161313.300H													
Lab PM: Heather Wilson				Lead Regulatory Agency: U.S. EPA Region 8				Address: 10670 White Rock Road, Suite 100, Rancho Cordova, CA													
Lab Phone: (913) 563-1407				California Global ID No.: NA				Consultant/Contractor PM: Marc Lombardi													
Lab Shipping Acct: UPS # 733W87				Enfos Proposal No: D009D-0357 WR 268175				Phone: 916-636-3200													
Lab Bottle Order No: NA				Accounting Mode: Provision <u>X</u> OOC-BU _____ OOC-RM _____				Email Report/EDD To: lynda.lombardi@amec.com													
Other Info: 2013 517 Injection Treatability Study				Stage: 4-Execute Activity: Spend				Invoice To: BP/ARC <u>X</u> Contractor _____													
BP/ARC EBM: Anthony Brown				Matrix		No. Containers / Preservative		Requested Analyses				Report Type & QC Level									
EBM Phone: 714-228-6770												Standard <u>X</u>									
EBM Email: anthony.brown@bp.com												Full Data Package _____									
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Methanol	Tot Metals-see notes (E200.7/200.8/E245.1)	Dis Metals-see notes (E200.7/200.8/E245.1)	Alkalinity-Total, HCO ₃ , CO ₃ , OH (SM2320B)	Bromide (E300.0)	Chloride (E300.0)	Fluoride (E300.0)	Sulfate (E300.0)	Comments	
01	JTA SHAFT 46530720	7/20/13	0940	X			3	1	0	2	0	0		X	X	X	X	X	X	X	60149482
Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.																					
Dissolved metals samples are field filtered.																					
Metals are: Al, Ca, Fe, K, Li, Na, Mg, Si, Zn (E200.7); As, Cd, Co, Cr, Cu, Mn, Ni, Pb, Se (E200.8); and Hg (E245.1)																					
RUSH 5-day TAT																					
Sampler's Name: <u>ABBY CARLIER</u>				Reinquished By / Affiliation: <u>AMEC</u>				Date: <u>7/23/13</u>		Time: <u>1400</u>		Accepted By / Affiliation: <u>PAST</u>				Date: <u>7/24/13</u>		Time: <u>1020</u>			
Sampler's Company: <u>AMEC</u>																					
Shipment Method: <u>UPS</u>				Ship Date: <u>7/23/13</u>																	
Shipment Tracking No: <u>1Z 735 W87 84 4935 8765</u>																					
Special Instructions:																					
THIS LINE - LAB USE ONLY: Custody Seals In Place <u>(Yes / No)</u>				Temp Blank <u>(Yes / No)</u>				Cooler Temp on Receipt: <u>1.3</u> °F/C				Trip Blank: Yes <u>(No)</u>				MS/MSD Sample Submitted: Yes <u>(No)</u>					

August 12, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: 2013 517 INJECTION TREATABILIT
Pace Project No.: 60149777

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on July 27, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149777

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149777

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60149777001	DR3A1307240400	Water	07/24/13 04:00	07/27/13 09:20
60149777002	DR3A1307250400	Water	07/25/13 04:00	07/27/13 09:20
60149777003	DR3A1307261200	Water	07/26/13 12:00	07/27/13 09:20

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SAMPLE ANALYTE COUNT

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149777

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60149777001	DR3A1307240400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60149777002	DR3A1307250400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60149777003	DR3A1307261200	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149777

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: August 12, 2013

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23658

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60149777001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1227487)
 - Calcium
- MSD (Lab ID: 1227488)
 - Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149777

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: August 12, 2013

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23660

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60149777001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1227495)
 - Calcium, Dissolved
- MSD (Lab ID: 1227496)
 - Calcium, Dissolved

Additional Comments:

Analyte Comments:

QC Batch: MPRP/23660

- DR3A1307250400 (Lab ID: 60149777002)
 - Zinc, Dissolved

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149777

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: August 12, 2013

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23659

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60149777002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1227491)
- Manganese

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT
Pace Project No.: 60149777

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: August 12, 2013

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23661

B: Analyte was detected in the associated method blank.

- BLANK for HBN 300523 [MPRP/236 (Lab ID: 1227498)
- Lead, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23661

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60149777002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1227500)
 - Manganese, Dissolved
- MSD (Lab ID: 1227501)
 - Manganese, Dissolved

Additional Comments:

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149777

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: August 12, 2013

General Information:

3 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149777

Method: EPA 245.1

Description: 245.1 Mercury, Dissolved

Client: BP AMEC

Date: August 12, 2013

General Information:

3 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149777

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: August 12, 2013

General Information:

3 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

QC Batch: WET/42611

R1: RPD value was outside control limits.

- DUP (Lab ID: 1227589)
- Alkalinity, Bicarbonate (CaCO₃)

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149777

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: August 12, 2013

General Information:

3 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILITY

Pace Project No.: 60149777

Sample: DR3A1307240400 Lab ID: 60149777001 Collected: 07/24/13 04:00 Received: 07/27/13 09:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	809	ug/L	75.0	16.6	1	07/29/13 15:30	07/31/13 11:07	7429-90-5	M1
Calcium	235000	ug/L	100	10.4	1	07/29/13 15:30	07/31/13 11:07	7440-70-2	
Iron	7750	ug/L	50.0	11.6	1	07/29/13 15:30	07/31/13 11:07	7439-89-6	
Lithium	23.7	ug/L	10.0	2.4	1	07/29/13 15:30	07/31/13 11:07	7439-93-2	
Magnesium	19600	ug/L	50.0	6.5	1	07/29/13 15:30	07/31/13 11:07	7439-95-4	
Potassium	3580	ug/L	500	44.4	1	07/29/13 15:30	07/31/13 11:07	7440-09-7	
Silicon	8320	ug/L	500	23.9	1	07/29/13 15:30	07/31/13 11:07	7440-21-3	
Sodium	19800	ug/L	500	21.7	1	07/29/13 15:30	07/31/13 11:07	7440-23-5	
Zinc	4000	ug/L	50.0	3.3	1	07/29/13 15:30	07/31/13 11:07	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	33.7J	ug/L	75.0	16.6	1	07/29/13 15:30	07/31/13 11:41	7429-90-5	M1
Calcium, Dissolved	225000	ug/L	100	10.4	1	07/29/13 15:30	07/31/13 11:41	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	11.6	1	07/29/13 15:30	07/31/13 11:41	7439-89-6	
Lithium, Dissolved	23.5	ug/L	10.0	2.4	1	07/29/13 15:30	07/31/13 11:41	7439-93-2	
Magnesium, Dissolved	19000	ug/L	50.0	6.5	1	07/29/13 15:30	07/31/13 11:41	7439-95-4	
Potassium, Dissolved	3440	ug/L	500	44.4	1	07/29/13 15:30	07/31/13 11:41	7440-09-7	
Silicon, Dissolved	7220	ug/L	500	23.9	1	07/29/13 15:30	07/31/13 11:41	7440-21-3	
Sodium, Dissolved	19100	ug/L	500	21.7	1	07/29/13 15:30	07/31/13 11:41	7440-23-5	
Zinc, Dissolved	3460	ug/L	50.0	3.3	1	07/29/13 15:30	07/31/13 11:41	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.2	ug/L	1.0	0.050	1	07/29/13 15:30	08/09/13 20:46	7440-38-2	
Cadmium	21.5	ug/L	0.50	0.050	1	07/29/13 15:30	08/09/13 20:46	7440-43-9	
Chromium	0.41J	ug/L	1.0	0.070	1	07/29/13 15:30	08/09/13 20:46	7440-47-3	
Cobalt	2.4	ug/L	1.0	0.080	1	07/29/13 15:30	08/09/13 20:46	7440-48-4	
Copper	181	ug/L	1.0	0.12	1	07/29/13 15:30	08/09/13 20:46	7440-50-8	
Lead	14.0	ug/L	1.0	0.030	1	07/29/13 15:30	08/09/13 20:46	7439-92-1	
Manganese	1870	ug/L	1.0	0.14	1	07/29/13 15:30	08/09/13 20:46	7439-96-5	
Nickel	2.6	ug/L	1.0	0.070	1	07/29/13 15:30	08/09/13 20:46	7440-02-0	
Selenium	0.24J	ug/L	1.0	0.14	1	07/29/13 15:30	08/09/13 20:46	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	1.0	0.050	1	07/29/13 15:30	08/09/13 20:17	7440-38-2	
Cadmium, Dissolved	18.6	ug/L	0.50	0.050	1	07/29/13 15:30	08/09/13 20:17	7440-43-9	
Chromium, Dissolved	0.17J	ug/L	1.0	0.070	1	07/29/13 15:30	08/09/13 20:17	7440-47-3	
Cobalt, Dissolved	3.9	ug/L	1.0	0.080	1	07/29/13 15:30	08/09/13 20:17	7440-48-4	D9
Copper, Dissolved	10.1	ug/L	1.0	0.12	1	07/29/13 15:30	08/09/13 20:17	7440-50-8	
Lead, Dissolved	0.29J	ug/L	1.0	0.030	1	07/29/13 15:30	08/09/13 20:17	7439-92-1	B
Manganese, Dissolved	1840	ug/L	1.0	0.14	1	07/29/13 15:30	08/09/13 20:17	7439-96-5	
Nickel, Dissolved	3.0	ug/L	1.0	0.070	1	07/29/13 15:30	08/09/13 20:17	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	07/29/13 15:30	08/09/13 20:17	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/29/13 13:30	07/30/13 12:50	7439-97-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149777

Sample: DR3A1307240400 Lab ID: 60149777001 Collected: 07/24/13 04:00 Received: 07/27/13 09:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/29/13 13:30	07/30/13 12:05	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	123	mg/L	20.0	1.2	1		07/30/13 08:55		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/30/13 08:55		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/30/13 08:55		
Alkalinity, Total as CaCO ₃	123	mg/L	20.0	1.2	1		07/30/13 08:55		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	ND	mg/L	1.0	0.090	1		08/01/13 12:06	24959-67-9	
Chloride	0.88J	mg/L	1.0	0.50	1		08/01/13 12:06	16887-00-6	
Fluoride	2.5	mg/L	0.20	0.047	1		08/01/13 12:06	16984-48-8	
Sulfate	701	mg/L	50.0	8.0	50		08/01/13 12:22	14808-79-8	

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILITY

Pace Project No.: 60149777

Sample: DR3A1307250400 Lab ID: 60149777002 Collected: 07/25/13 04:00 Received: 07/27/13 09:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	843	ug/L	75.0	16.6	1	07/29/13 15:30	07/31/13 11:19	7429-90-5	
Calcium	239000	ug/L	100	10.4	1	07/29/13 15:30	07/31/13 11:19	7440-70-2	
Iron	7920	ug/L	50.0	11.6	1	07/29/13 15:30	07/31/13 11:19	7439-89-6	
Lithium	24.2	ug/L	10.0	2.4	1	07/29/13 15:30	07/31/13 11:19	7439-93-2	
Magnesium	19800	ug/L	50.0	6.5	1	07/29/13 15:30	07/31/13 11:19	7439-95-4	
Potassium	3530	ug/L	500	44.4	1	07/29/13 15:30	07/31/13 11:19	7440-09-7	
Silicon	8400	ug/L	500	23.9	1	07/29/13 15:30	07/31/13 11:19	7440-21-3	
Sodium	19900	ug/L	500	21.7	1	07/29/13 15:30	07/31/13 11:19	7440-23-5	
Zinc	4110	ug/L	50.0	3.3	1	07/29/13 15:30	07/31/13 11:19	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	51.7J	ug/L	75.0	16.6	1	07/29/13 15:30	07/31/13 11:53	7429-90-5	
Calcium, Dissolved	237000	ug/L	100	10.4	1	07/29/13 15:30	07/31/13 11:53	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	11.6	1	07/29/13 15:30	07/31/13 11:53	7439-89-6	
Lithium, Dissolved	23.3	ug/L	10.0	2.4	1	07/29/13 15:30	07/31/13 11:53	7439-93-2	
Magnesium, Dissolved	19800	ug/L	50.0	6.5	1	07/29/13 15:30	07/31/13 11:53	7439-95-4	
Potassium, Dissolved	3640	ug/L	500	44.4	1	07/29/13 15:30	07/31/13 11:53	7440-09-7	D9
Silicon, Dissolved	7600	ug/L	500	23.9	1	07/29/13 15:30	07/31/13 11:53	7440-21-3	
Sodium, Dissolved	19800	ug/L	500	21.7	1	07/29/13 15:30	07/31/13 11:53	7440-23-5	
Zinc, Dissolved	3630	ug/L	50.0	3.3	1	07/29/13 15:30	07/31/13 11:53	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.3	ug/L	1.0	0.050	1	07/29/13 15:30	08/09/13 21:03	7440-38-2	
Cadmium	21.2	ug/L	0.50	0.050	1	07/29/13 15:30	08/09/13 21:03	7440-43-9	
Chromium	0.42J	ug/L	1.0	0.070	1	07/29/13 15:30	08/09/13 21:03	7440-47-3	
Cobalt	2.4	ug/L	1.0	0.080	1	07/29/13 15:30	08/09/13 21:03	7440-48-4	
Copper	188	ug/L	1.0	0.12	1	07/29/13 15:30	08/09/13 21:03	7440-50-8	
Lead	14.3	ug/L	1.0	0.030	1	07/29/13 15:30	08/09/13 21:03	7439-92-1	
Manganese	1890	ug/L	1.0	0.14	1	07/29/13 15:30	08/09/13 21:03	7439-96-5	M1
Nickel	2.8	ug/L	1.0	0.070	1	07/29/13 15:30	08/09/13 21:03	7440-02-0	
Selenium	0.20J	ug/L	1.0	0.14	1	07/29/13 15:30	08/09/13 21:03	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.071J	ug/L	1.0	0.050	1	07/29/13 15:30	08/09/13 20:21	7440-38-2	
Cadmium, Dissolved	18.9	ug/L	0.50	0.050	1	07/29/13 15:30	08/09/13 20:21	7440-43-9	
Chromium, Dissolved	ND	ug/L	1.0	0.070	1	07/29/13 15:30	08/09/13 20:21	7440-47-3	
Cobalt, Dissolved	2.9	ug/L	1.0	0.080	1	07/29/13 15:30	08/09/13 20:21	7440-48-4	D9
Copper, Dissolved	8.3	ug/L	1.0	0.12	1	07/29/13 15:30	08/09/13 20:21	7440-50-8	
Lead, Dissolved	0.22J	ug/L	1.0	0.030	1	07/29/13 15:30	08/09/13 20:21	7439-92-1	B
Manganese, Dissolved	1890	ug/L	1.0	0.14	1	07/29/13 15:30	08/09/13 20:21	7439-96-5	M1
Nickel, Dissolved	3.3	ug/L	1.0	0.070	1	07/29/13 15:30	08/09/13 20:21	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	07/29/13 15:30	08/09/13 20:21	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/29/13 13:30	07/30/13 12:52	7439-97-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149777

Sample: DR3A1307250400		Lab ID: 60149777002		Collected: 07/25/13 04:00		Received: 07/27/13 09:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/29/13 13:30	07/30/13 12:12	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	112	mg/L	20.0	1.2	1		07/30/13 09:03		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/30/13 09:03		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/30/13 09:03		
Alkalinity, Total as CaCO ₃	112	mg/L	20.0	1.2	1		07/30/13 09:03		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.090	1		08/01/13 12:37	24959-67-9	
Chloride	0.89J	mg/L	1.0	0.50	1		08/01/13 12:37	16887-00-6	
Fluoride	2.4	mg/L	0.20	0.047	1		08/01/13 12:37	16984-48-8	
Sulfate	672	mg/L	50.0	8.0	50		08/01/13 12:53	14808-79-8	

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILITY

Pace Project No.: 60149777

Sample: DR3A1307261200 Lab ID: 60149777003 Collected: 07/26/13 12:00 Received: 07/27/13 09:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	808	ug/L	75.0	16.6	1	07/29/13 15:30	07/31/13 11:22	7429-90-5	
Calcium	233000	ug/L	100	10.4	1	07/29/13 15:30	07/31/13 11:22	7440-70-2	
Iron	7680	ug/L	50.0	11.6	1	07/29/13 15:30	07/31/13 11:22	7439-89-6	
Lithium	23.2	ug/L	10.0	2.4	1	07/29/13 15:30	07/31/13 11:22	7439-93-2	
Magnesium	19000	ug/L	50.0	6.5	1	07/29/13 15:30	07/31/13 11:22	7439-95-4	
Potassium	3440	ug/L	500	44.4	1	07/29/13 15:30	07/31/13 11:22	7440-09-7	
Silicon	8220	ug/L	500	23.9	1	07/29/13 15:30	07/31/13 11:22	7440-21-3	
Sodium	19000	ug/L	500	21.7	1	07/29/13 15:30	07/31/13 11:22	7440-23-5	
Zinc	3920	ug/L	50.0	3.3	1	07/29/13 15:30	07/31/13 11:22	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	54.5J	ug/L	75.0	16.6	1	07/29/13 15:30	07/31/13 11:56	7429-90-5	
Calcium, Dissolved	237000	ug/L	100	10.4	1	07/29/13 15:30	07/31/13 11:56	7440-70-2	D9
Iron, Dissolved	487	ug/L	50.0	11.6	1	07/29/13 15:30	07/31/13 11:56	7439-89-6	
Lithium, Dissolved	24.6	ug/L	10.0	2.4	1	07/29/13 15:30	07/31/13 11:56	7439-93-2	D9
Magnesium, Dissolved	20000	ug/L	50.0	6.5	1	07/29/13 15:30	07/31/13 11:56	7439-95-4	D9
Potassium, Dissolved	3540	ug/L	500	44.4	1	07/29/13 15:30	07/31/13 11:56	7440-09-7	D9
Silicon, Dissolved	7780	ug/L	500	23.9	1	07/29/13 15:30	07/31/13 11:56	7440-21-3	
Sodium, Dissolved	19300	ug/L	500	21.7	1	07/29/13 15:30	07/31/13 11:56	7440-23-5	D9
Zinc, Dissolved	3630	ug/L	50.0	3.3	1	07/29/13 15:30	07/31/13 11:56	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.2	ug/L	1.0	0.050	1	07/29/13 15:30	08/09/13 21:20	7440-38-2	
Cadmium	21.2	ug/L	0.50	0.050	1	07/29/13 15:30	08/09/13 21:20	7440-43-9	
Chromium	0.39J	ug/L	1.0	0.070	1	07/29/13 15:30	08/09/13 21:20	7440-47-3	
Cobalt	2.3	ug/L	1.0	0.080	1	07/29/13 15:30	08/09/13 21:20	7440-48-4	
Copper	185	ug/L	1.0	0.12	1	07/29/13 15:30	08/09/13 21:20	7440-50-8	
Lead	14.0	ug/L	1.0	0.030	1	07/29/13 15:30	08/09/13 21:20	7439-92-1	
Manganese	1860	ug/L	1.0	0.14	1	07/29/13 15:30	08/09/13 21:20	7439-96-5	
Nickel	2.7	ug/L	1.0	0.070	1	07/29/13 15:30	08/09/13 21:20	7440-02-0	
Selenium	0.18J	ug/L	1.0	0.14	1	07/29/13 15:30	08/09/13 21:20	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.12J	ug/L	1.0	0.050	1	07/29/13 15:30	08/09/13 20:38	7440-38-2	
Cadmium, Dissolved	19.3	ug/L	0.50	0.050	1	07/29/13 15:30	08/09/13 20:38	7440-43-9	
Chromium, Dissolved	ND	ug/L	1.0	0.070	1	07/29/13 15:30	08/09/13 20:38	7440-47-3	
Cobalt, Dissolved	3.0	ug/L	1.0	0.080	1	07/29/13 15:30	08/09/13 20:38	7440-48-4	D9
Copper, Dissolved	11.0	ug/L	1.0	0.12	1	07/29/13 15:30	08/09/13 20:38	7440-50-8	
Lead, Dissolved	0.21J	ug/L	1.0	0.030	1	07/29/13 15:30	08/09/13 20:38	7439-92-1	B
Manganese, Dissolved	1880	ug/L	1.0	0.14	1	07/29/13 15:30	08/09/13 20:38	7439-96-5	D9
Nickel, Dissolved	2.9	ug/L	1.0	0.070	1	07/29/13 15:30	08/09/13 20:38	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	07/29/13 15:30	08/09/13 20:38	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/29/13 13:30	07/30/13 12:57	7439-97-6	

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149777

Sample: DR3A1307261200		Lab ID: 60149777003		Collected: 07/26/13 12:00		Received: 07/27/13 09:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/29/13 13:30	07/30/13 12:19	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	119	mg/L	20.0	1.2	1		07/30/13 09:07		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/30/13 09:07		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	1.2	1		07/30/13 09:07		
Alkalinity, Total as CaCO ₃	119	mg/L	20.0	1.2	1		07/30/13 09:07		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.090	1		08/01/13 13:09	24959-67-9	
Chloride	0.88J	mg/L	1.0	0.50	1		08/01/13 13:09	16887-00-6	
Fluoride	2.5	mg/L	0.20	0.047	1		08/01/13 13:09	16984-48-8	
Sulfate	645	mg/L	50.0	8.0	50		08/01/13 13:24	14808-79-8	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149777

QC Batch: MERP/7550 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60149777001, 60149777002, 60149777003

METHOD BLANK: 1227392 Matrix: Water

Associated Lab Samples: 60149777001, 60149777002, 60149777003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	07/30/13 12:21	

LABORATORY CONTROL SAMPLE: 1227393

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.4	87	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1227394 1227395

Parameter	Units	60149604002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	1.2	5	5	5.3	5.0	81	76	70-130	5	20	

MATRIX SPIKE SAMPLE: 1227396

Parameter	Units	60149777002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	ND	5	4.1	80	70-130	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149777

QC Batch: MERP/7551 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury - Dissolved
Associated Lab Samples: 60149777001, 60149777002, 60149777003

METHOD BLANK: 1227397 Matrix: Water

Associated Lab Samples: 60149777001, 60149777002, 60149777003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	07/30/13 11:59	

LABORATORY CONTROL SAMPLE: 1227398

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	4.5	90	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1227399 1227400

Parameter	Units	60149777002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury, Dissolved	ug/L	ND	5	5	4.2	4.0	83	78	70-130	5	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149777

QC Batch: MPRP/23658 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60149777001, 60149777002, 60149777003

METHOD BLANK: 1227485 Matrix: Water

Associated Lab Samples: 60149777001, 60149777002, 60149777003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	07/31/13 11:00	
Calcium	ug/L	ND	100	07/31/13 11:00	
Iron	ug/L	ND	50.0	07/31/13 11:00	
Lithium	ug/L	ND	10.0	07/31/13 11:00	
Magnesium	ug/L	ND	50.0	07/31/13 11:00	
Potassium	ug/L	ND	500	07/31/13 11:00	
Silicon	ug/L	47.8J	500	07/31/13 11:00	
Sodium	ug/L	ND	500	07/31/13 11:00	
Zinc	ug/L	ND	50.0	07/31/13 11:00	

LABORATORY CONTROL SAMPLE: 1227486

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	10300	103	85-115	
Calcium	ug/L	10000	10000	100	85-115	
Iron	ug/L	10000	10100	101	85-115	
Lithium	ug/L	1000	1020	102	85-115	
Magnesium	ug/L	10000	10100	101	85-115	
Potassium	ug/L	10000	10100	101	85-115	
Silicon	ug/L	5000	5140	103	85-115	
Sodium	ug/L	10000	10300	103	85-115	
Zinc	ug/L	1000	996	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1227487 1227488

Parameter	Units	60149777001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	809	10000	10000	10600	10900	98	101	70-130	3	8	
Calcium	ug/L	235000	10000	10000	239000	250000	43	150	70-130	4	9	M1
Iron	ug/L	7750	10000	10000	17000	17600	92	98	70-130	3	10	
Lithium	ug/L	23.7	1000	1000	1040	1060	101	104	70-130	2	20	
Magnesium	ug/L	19600	10000	10000	28600	29400	91	99	70-130	3	9	
Potassium	ug/L	3580	10000	10000	13500	13800	99	102	70-130	2	7	
Silicon	ug/L	8320	5000	5000	12900	13300	92	100	70-130	3	5	
Sodium	ug/L	19800	10000	10000	29600	30800	98	110	70-130	4	8	
Zinc	ug/L	4000	1000	1000	4900	5030	90	103	70-130	3	11	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

QC Project No.: 60149777

QC Batch: MPRP/23660

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60149777001, 60149777002, 60149777003

METHOD BLANK: 1227493

Matrix: Water

Associated Lab Samples: 60149777001, 60149777002, 60149777003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	07/31/13 11:34	
Calcium, Dissolved	ug/L	ND	100	07/31/13 11:34	
Iron, Dissolved	ug/L	ND	50.0	07/31/13 11:34	
Lithium, Dissolved	ug/L	ND	10.0	07/31/13 11:34	
Magnesium, Dissolved	ug/L	ND	50.0	07/31/13 11:34	
Potassium, Dissolved	ug/L	ND	500	07/31/13 11:34	
Silicon, Dissolved	ug/L	32.4J	500	07/31/13 11:34	
Sodium, Dissolved	ug/L	ND	500	07/31/13 11:34	
Zinc, Dissolved	ug/L	ND	50.0	07/31/13 11:34	

LABORATORY CONTROL SAMPLE: 1227494

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	9970	100	85-115	
Calcium, Dissolved	ug/L	10000	9650	97	85-115	
Iron, Dissolved	ug/L	10000	9760	98	85-115	
Lithium, Dissolved	ug/L	1000	980	98	85-115	
Magnesium, Dissolved	ug/L	10000	9690	97	85-115	
Potassium, Dissolved	ug/L	10000	9850	99	85-115	
Silicon, Dissolved	ug/L	5000	4980	100	85-115	
Sodium, Dissolved	ug/L	10000	9930	99	85-115	
Zinc, Dissolved	ug/L	1000	970	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1227495

1227496

Parameter	Units	60149777001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	33.7J	10000	10000	10100	10300	101	103	70-130	2	8	
Calcium, Dissolved	ug/L	225000	10000	10000	246000	247000	208	214	70-130	0	9 M1	
Iron, Dissolved	ug/L	ND	10000	10000	9820	9930	98	99	70-130	1	10	
Lithium, Dissolved	ug/L	23.5	1000	1000	1060	1070	103	104	70-130	1	20	
Magnesium, Dissolved	ug/L	19000	10000	10000	28800	29300	98	104	70-130	2	9	
Potassium, Dissolved	ug/L	3440	10000	10000	13900	14000	105	106	70-130	1	7	
Silicon, Dissolved	ug/L	7220	5000	5000	12700	12800	109	111	70-130	1	5	
Sodium, Dissolved	ug/L	19100	10000	10000	30400	30400	113	113	70-130	0	8	
Zinc, Dissolved	ug/L	3460	1000	1000	4460	4550	100	108	70-130	2	11	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149777

QC Batch: MPRP/23659 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60149777001, 60149777002, 60149777003

METHOD BLANK: 1227489 Matrix: Water

Associated Lab Samples: 60149777001, 60149777002, 60149777003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	08/09/13 20:59	
Cadmium	ug/L	ND	0.50	08/09/13 20:59	
Chromium	ug/L	ND	1.0	08/09/13 20:59	
Cobalt	ug/L	ND	1.0	08/09/13 20:59	
Copper	ug/L	ND	1.0	08/09/13 20:59	
Lead	ug/L	0.20J	1.0	08/09/13 20:59	
Manganese	ug/L	ND	1.0	08/09/13 20:59	
Nickel	ug/L	ND	1.0	08/09/13 20:59	
Selenium	ug/L	ND	1.0	08/09/13 20:59	

LABORATORY CONTROL SAMPLE: 1227490

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	40.9	102	85-115	
Cadmium	ug/L	40	40.8	102	85-115	
Chromium	ug/L	40	41.0	103	85-115	
Cobalt	ug/L	40	40.2	100	85-115	
Copper	ug/L	40	41.1	103	85-115	
Lead	ug/L	40	40.1	100	85-115	
Manganese	ug/L	40	40.9	102	85-115	
Nickel	ug/L	40	40.9	102	85-115	
Selenium	ug/L	40	40.4	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1227491 1227492

Parameter	Units	60149777002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	1.3	40	40	43.6	43.5	106	105	70-130	0	20	
Cadmium	ug/L	21.2	40	40	60.4	60.3	98	98	70-130	0	20	
Chromium	ug/L	0.42J	40	40	40.9	40.3	101	100	70-130	1	20	
Cobalt	ug/L	2.4	40	40	41.3	41.8	97	98	70-130	1	20	
Copper	ug/L	188	40	40	223	224	88	91	70-130	0	20	
Lead	ug/L	14.3	40	40	54.7	55.4	101	103	70-130	1	20	
Manganese	ug/L	1890	40	40	1900	1920	42	70	70-130	1	20 M1	
Nickel	ug/L	2.8	40	40	40.9	40.9	95	95	70-130	0	20	
Selenium	ug/L	0.20J	40	40	41.2	40.4	102	101	70-130	2	20	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149777

QC Batch: MPRP/23661 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60149777001, 60149777002, 60149777003

METHOD BLANK: 1227498 Matrix: Water

Associated Lab Samples: 60149777001, 60149777002, 60149777003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	08/09/13 20:09	
Cadmium, Dissolved	ug/L	ND	0.50	08/09/13 20:09	
Chromium, Dissolved	ug/L	ND	1.0	08/09/13 20:09	
Cobalt, Dissolved	ug/L	ND	1.0	08/09/13 20:09	
Copper, Dissolved	ug/L	ND	1.0	08/09/13 20:09	
Lead, Dissolved	ug/L	0.20J	1.0	08/09/13 20:09	
Manganese, Dissolved	ug/L	ND	1.0	08/09/13 20:09	
Nickel, Dissolved	ug/L	ND	1.0	08/09/13 20:09	
Selenium, Dissolved	ug/L	ND	1.0	08/09/13 20:09	

LABORATORY CONTROL SAMPLE: 1227499

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	42.3	106	85-115	
Cadmium, Dissolved	ug/L	40	40.9	102	85-115	
Chromium, Dissolved	ug/L	40	41.6	104	85-115	
Cobalt, Dissolved	ug/L	40	41.1	103	85-115	
Copper, Dissolved	ug/L	40	42.3	106	85-115	
Lead, Dissolved	ug/L	40	40.6	101	85-115	
Manganese, Dissolved	ug/L	40	40.9	102	85-115	
Nickel, Dissolved	ug/L	40	41.7	104	85-115	
Selenium, Dissolved	ug/L	40	42.0	105	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1227500 1227501

Parameter	Units	60149777002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	0.071J	40	40	43.3	42.8	108	107	70-130	1	20	
Cadmium, Dissolved	ug/L	18.9	40	40	58.7	58.9	100	100	70-130	0	20	
Chromium, Dissolved	ug/L	ND	40	40	40.1	40.2	100	101	70-130	0	20	
Cobalt, Dissolved	ug/L	2.9	40	40	42.5	42.0	99	98	70-130	1	20	
Copper, Dissolved	ug/L	8.3	40	40	46.6	46.1	96	95	70-130	1	20	
Lead, Dissolved	ug/L	0.22J	40	40	41.2	41.2	102	102	70-130	0	20	
Manganese, Dissolved	ug/L	1890	40	40	1960	1900	172	32	70-130	3	20 M1	
Nickel, Dissolved	ug/L	3.3	40	40	42.0	41.4	97	95	70-130	1	20	
Selenium, Dissolved	ug/L	ND	40	40	42.7	43.6	106	109	70-130	2	20	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149777

QC Batch: WET/42611 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60149777001, 60149777002, 60149777003

METHOD BLANK: 1227585 Matrix: Water

Associated Lab Samples: 60149777001, 60149777002, 60149777003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	07/30/13 08:47	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	07/30/13 08:47	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	07/30/13 08:47	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	07/30/13 08:47	

LABORATORY CONTROL SAMPLE: 1227586

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	499	100	90-110	

SAMPLE DUPLICATE: 1227589

Parameter	Units	60149148001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	49.1		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	79.2	85.6	8	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	61.0	36.4	50	10	R1

SAMPLE DUPLICATE: 1227590

Parameter	Units	60149649010 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	ND	ND		10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	ND		10	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149777

QC Batch: WETA/25648 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60149777001, 60149777002, 60149777003

METHOD BLANK: 1229058 Matrix: Water

Associated Lab Samples: 60149777001, 60149777002, 60149777003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	08/01/13 09:02	
Chloride	mg/L	ND	1.0	08/01/13 09:02	
Fluoride	mg/L	ND	0.20	08/01/13 09:02	
Sulfate	mg/L	ND	1.0	08/01/13 09:02	

LABORATORY CONTROL SAMPLE: 1229059

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.0	100	90-110	
Chloride	mg/L	5	4.9	97	90-110	
Fluoride	mg/L	2.5	2.5	100	90-110	
Sulfate	mg/L	5	4.8	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1229060 1229061

Parameter	Units	60149560001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	ND	25000	25000	25000	24900	100	100	75-119	0	10	
Chloride	mg/L	63800	25000	25000	92000	91500	113	111	64-118	1	12	
Fluoride	mg/L	ND	12500	12500	12600	12500	98	97	75-110	1	10	
Sulfate	mg/L	18500	25000	25000	45000	45100	106	107	61-119	0	10	

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QUALIFIERS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149777

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

R1 RPD value was outside control limits.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149777

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60149777001	DR3A1307240400	EPA 200.7	MPRP/23658	EPA 200.7	ICP/18562
60149777002	DR3A1307250400	EPA 200.7	MPRP/23658	EPA 200.7	ICP/18562
60149777003	DR3A1307261200	EPA 200.7	MPRP/23658	EPA 200.7	ICP/18562
60149777001	DR3A1307240400	EPA 200.7	MPRP/23660	EPA 200.7	ICP/18563
60149777002	DR3A1307250400	EPA 200.7	MPRP/23660	EPA 200.7	ICP/18563
60149777003	DR3A1307261200	EPA 200.7	MPRP/23660	EPA 200.7	ICP/18563
60149777001	DR3A1307240400	EPA 200.8	MPRP/23659	EPA 200.8	ICPM/2420
60149777002	DR3A1307250400	EPA 200.8	MPRP/23659	EPA 200.8	ICPM/2420
60149777003	DR3A1307261200	EPA 200.8	MPRP/23659	EPA 200.8	ICPM/2420
60149777001	DR3A1307240400	EPA 200.8	MPRP/23661	EPA 200.8	ICPM/2421
60149777002	DR3A1307250400	EPA 200.8	MPRP/23661	EPA 200.8	ICPM/2421
60149777003	DR3A1307261200	EPA 200.8	MPRP/23661	EPA 200.8	ICPM/2421
60149777001	DR3A1307240400	EPA 245.1	MERP/7550	EPA 245.1	MERC/7508
60149777002	DR3A1307250400	EPA 245.1	MERP/7550	EPA 245.1	MERC/7508
60149777003	DR3A1307261200	EPA 245.1	MERP/7550	EPA 245.1	MERC/7508
60149777001	DR3A1307240400	EPA 245.1	MERP/7551	EPA 245.1	MERC/7507
60149777002	DR3A1307250400	EPA 245.1	MERP/7551	EPA 245.1	MERC/7507
60149777003	DR3A1307261200	EPA 245.1	MERP/7551	EPA 245.1	MERC/7507
60149777001	DR3A1307240400	SM 2320B	WET/42611		
60149777002	DR3A1307250400	SM 2320B	WET/42611		
60149777003	DR3A1307261200	SM 2320B	WET/42611		
60149777001	DR3A1307240400	EPA 300.0	WETA/25648		
60149777002	DR3A1307250400	EPA 300.0	WETA/25648		
60149777003	DR3A1307261200	EPA 300.0	WETA/25648		

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Sample Condition Upon Receipt
ESI Tech Spec Client

WO#: 60149777



60149777

Client Name: BP AMEC

Optional

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Proj Due Date:

Tracking #: 1Z 733 W87 22 1005 6627 Pace Shipping Label Used? Yes ☒ No ☐

Proj Name:

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other 12PIC

Thermometer Used: T-112 T-194

Type of Ice: Wet Blue ☐ None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 2.1/4.2

Date and initials of person examining contents: pv 7/27/13

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests? <u>pv 7/27/13</u>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses Matrix: <u>WT</u>		13.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:

Client Notification/ Resolution:

Copy COC to Client? Y / N

Field Data Required? Y / N

Person Contacted: _____

Date/Time: _____

Comments/ Resolution: _____

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: 1000 Start:

End: 1005 End:

Temp: _____ Temp:

Project Manager Review: dmw

Date: 7/29/13

August 15, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: 2013 517 INJECTION TREATABILIT
Pace Project No.: 60149890

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on July 30, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149890

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

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SAMPLE SUMMARY

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149890

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60149890001	DR3A1307270400	Water	07/27/13 04:00	07/30/13 10:00
60149890002	DR3A1307280400	Water	07/28/13 04:00	07/30/13 10:00
60149890003	DR3A1307291200	Water	07/29/13 12:00	07/30/13 10:00
60149890004	DUP1307291200	Water	07/29/13 12:00	07/30/13 10:00

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SAMPLE ANALYTE COUNT

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149890

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60149890001	DR3A1307270400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60149890002	DR3A1307280400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60149890003	DR3A1307291200	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60149890004	DUP1307291200	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149890

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: August 15, 2013

General Information:

4 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23675

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60149890001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1228343)
 - Calcium
- MSD (Lab ID: 1228344)
 - Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149890

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: August 15, 2013

General Information:

4 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23676

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60149890001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1228351)
 - Calcium, Dissolved
- MSD (Lab ID: 1228352)
 - Calcium, Dissolved

Additional Comments:

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149890

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: August 15, 2013

General Information:

4 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23678

B: Analyte was detected in the associated method blank.

- BLANK for HBN 300744 [MPRP/236 (Lab ID: 1228361)
- Chromium

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23678

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60149890002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1228363)
 - Manganese
- MSD (Lab ID: 1228364)
 - Manganese

Additional Comments:

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT
Pace Project No.: 60149890

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: August 15, 2013

General Information:

4 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23677

B: Analyte was detected in the associated method blank.

- BLANK for HBN 300743 [MPRP/236 (Lab ID: 1228357)]
- Lead, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23677

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60149890002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1228359)
 - Manganese, Dissolved
- MSD (Lab ID: 1228360)
 - Manganese, Dissolved

Additional Comments:

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149890

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: August 15, 2013

General Information:

4 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149890

Method: EPA 245.1

Description: 245.1 Mercury, Dissolved

Client: BP AMEC

Date: August 15, 2013

General Information:

4 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149890

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: August 15, 2013

General Information:

4 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149890

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: August 15, 2013

General Information:

4 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: WETA/25675

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60149649006, 60149890004

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1230989)
 - Sulfate
- MSD (Lab ID: 1230990)
 - Sulfate

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILITY

Pace Project No.: 60149890

Sample: DR3A1307270400 Lab ID: 60149890001 Collected: 07/27/13 04:00 Received: 07/30/13 10:00 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	1000	ug/L	75.0	16.6	1	07/31/13 10:10	08/02/13 10:26	7429-90-5	M1
Calcium	227000	ug/L	100	10.4	1	07/31/13 10:10	08/02/13 10:26	7440-70-2	
Iron	9960	ug/L	50.0	11.6	1	07/31/13 10:10	08/02/13 10:26	7439-89-6	
Lithium	22.2	ug/L	10.0	2.4	1	07/31/13 10:10	08/02/13 10:26	7439-93-2	
Magnesium	17600	ug/L	50.0	6.5	1	07/31/13 10:10	08/02/13 10:26	7439-95-4	
Potassium	3320	ug/L	500	44.4	1	07/31/13 10:10	08/02/13 10:26	7440-09-7	
Silicon	8020	ug/L	500	23.9	1	07/31/13 10:10	08/02/13 10:26	7440-21-3	
Sodium	18000	ug/L	500	21.7	1	07/31/13 10:10	08/02/13 10:26	7440-23-5	
Zinc	3830	ug/L	50.0	3.3	1	07/31/13 10:10	08/02/13 10:26	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	74.7J	ug/L	75.0	16.6	1	07/31/13 10:10	08/02/13 11:01	7429-90-5	D9,M1
Calcium, Dissolved	239000	ug/L	100	10.4	1	07/31/13 10:10	08/02/13 11:01	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	11.6	1	07/31/13 10:10	08/02/13 11:01	7439-89-6	
Lithium, Dissolved	23.2	ug/L	10.0	2.4	1	07/31/13 10:10	08/02/13 11:01	7439-93-2	D9
Magnesium, Dissolved	19200	ug/L	50.0	6.5	1	07/31/13 10:10	08/02/13 11:01	7439-95-4	D9
Potassium, Dissolved	3510	ug/L	500	44.4	1	07/31/13 10:10	08/02/13 11:01	7440-09-7	D9
Silicon, Dissolved	7220	ug/L	500	23.9	1	07/31/13 10:10	08/02/13 11:01	7440-21-3	
Sodium, Dissolved	19000	ug/L	500	21.7	1	07/31/13 10:10	08/02/13 11:01	7440-23-5	D9
Zinc, Dissolved	3180	ug/L	50.0	3.3	1	07/31/13 10:10	08/02/13 11:01	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.6	ug/L	1.0	0.050	1	07/31/13 10:10	08/09/13 22:38	7440-38-2	B
Cadmium	21.7	ug/L	0.50	0.050	1	07/31/13 10:10	08/09/13 22:38	7440-43-9	
Chromium	0.55J	ug/L	1.0	0.070	1	07/31/13 10:10	08/09/13 22:38	7440-47-3	
Cobalt	2.7	ug/L	1.0	0.080	1	07/31/13 10:10	08/09/13 22:38	7440-48-4	
Copper	201	ug/L	1.0	0.12	1	07/31/13 10:10	08/09/13 22:38	7440-50-8	
Lead	23.6	ug/L	1.0	0.030	1	07/31/13 10:10	08/09/13 22:38	7439-92-1	
Manganese	2170	ug/L	1.0	0.14	1	07/31/13 10:10	08/09/13 22:38	7439-96-5	
Nickel	3.1	ug/L	1.0	0.070	1	07/31/13 10:10	08/09/13 22:38	7440-02-0	
Selenium	0.19J	ug/L	1.0	0.14	1	07/31/13 10:10	08/09/13 22:38	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.073J	ug/L	1.0	0.050	1	07/31/13 10:10	08/09/13 21:53	7440-38-2	B
Cadmium, Dissolved	17.0	ug/L	0.50	0.050	1	07/31/13 10:10	08/09/13 21:53	7440-43-9	
Chromium, Dissolved	ND	ug/L	1.0	0.070	1	07/31/13 10:10	08/09/13 21:53	7440-47-3	
Cobalt, Dissolved	2.6	ug/L	1.0	0.080	1	07/31/13 10:10	08/09/13 21:53	7440-48-4	
Copper, Dissolved	5.5	ug/L	1.0	0.12	1	08/13/13 10:37	08/13/13 17:28	7440-50-8	
Lead, Dissolved	0.23J	ug/L	1.0	0.030	1	07/31/13 10:10	08/09/13 21:53	7439-92-1	
Manganese, Dissolved	1870	ug/L	1.0	0.14	1	07/31/13 10:10	08/09/13 21:53	7439-96-5	
Nickel, Dissolved	2.4	ug/L	1.0	0.070	1	08/13/13 10:37	08/13/13 17:28	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	07/31/13 10:10	08/09/13 21:53	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/31/13 10:45	07/31/13 14:16	7439-97-6	

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149890

Sample: DR3A1307270400 Lab ID: 60149890001 Collected: 07/27/13 04:00 Received: 07/30/13 10:00 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/31/13 10:45	07/31/13 13:49	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	115	mg/L	20.0	4.9	1		08/05/13 09:53		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	4.9	1		08/05/13 09:53		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	4.9	1		08/05/13 09:53		
Alkalinity, Total as CaCO ₃	115	mg/L	20.0	4.9	1		08/05/13 09:53		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	ND	mg/L	1.0	0.090	1		08/05/13 11:31	24959-67-9	
Chloride	0.90J	mg/L	1.0	0.50	1		08/05/13 11:31	16887-00-6	
Fluoride	2.4	mg/L	0.20	0.047	1		08/05/13 11:31	16984-48-8	
Sulfate	676	mg/L	50.0	8.0	50		08/05/13 11:45	14808-79-8	

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILITY

Pace Project No.: 60149890

Sample: DR3A1307280400 Lab ID: 60149890002 Collected: 07/28/13 04:00 Received: 07/30/13 10:00 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	886	ug/L	75.0	16.6	1	07/31/13 10:10	08/02/13 10:39	7429-90-5	
Calcium	233000	ug/L	100	10.4	1	07/31/13 10:10	08/02/13 10:39	7440-70-2	
Iron	8150	ug/L	50.0	11.6	1	07/31/13 10:10	08/02/13 10:39	7439-89-6	
Lithium	25.4	ug/L	10.0	2.4	1	07/31/13 10:10	08/02/13 10:39	7439-93-2	
Magnesium	18300	ug/L	50.0	6.5	1	07/31/13 10:10	08/02/13 10:39	7439-95-4	
Potassium	3440	ug/L	500	44.4	1	07/31/13 10:10	08/02/13 10:39	7440-09-7	
Silicon	8060	ug/L	500	23.9	1	07/31/13 10:10	08/02/13 10:39	7440-21-3	
Sodium	18300	ug/L	500	21.7	1	07/31/13 10:10	08/02/13 10:39	7440-23-5	
Zinc	3930	ug/L	50.0	3.3	1	07/31/13 10:10	08/02/13 10:39	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	75.4	ug/L	75.0	16.6	1	07/31/13 10:10	08/02/13 11:13	7429-90-5	
Calcium, Dissolved	234000	ug/L	100	10.4	1	07/31/13 10:10	08/02/13 11:13	7440-70-2	D9
Iron, Dissolved	ND	ug/L	50.0	11.6	1	07/31/13 10:10	08/02/13 11:13	7439-89-6	
Lithium, Dissolved	25.4	ug/L	10.0	2.4	1	07/31/13 10:10	08/02/13 11:13	7439-93-2	
Magnesium, Dissolved	18400	ug/L	50.0	6.5	1	07/31/13 10:10	08/02/13 11:13	7439-95-4	D9
Potassium, Dissolved	3480	ug/L	500	44.4	1	07/31/13 10:10	08/02/13 11:13	7440-09-7	D9
Silicon, Dissolved	7240	ug/L	500	23.9	1	07/31/13 10:10	08/02/13 11:13	7440-21-3	
Sodium, Dissolved	18600	ug/L	500	21.7	1	07/31/13 10:10	08/02/13 11:13	7440-23-5	D9
Zinc, Dissolved	3320	ug/L	50.0	3.3	1	07/31/13 10:10	08/02/13 11:13	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.4	ug/L	1.0	0.050	1	07/31/13 10:10	08/09/13 22:42	7440-38-2	
Cadmium	21.2	ug/L	0.50	0.050	1	07/31/13 10:10	08/09/13 22:42	7440-43-9	
Chromium	0.53J	ug/L	1.0	0.070	1	07/31/13 10:10	08/09/13 22:42	7440-47-3	B
Cobalt	2.4	ug/L	1.0	0.080	1	07/31/13 10:10	08/09/13 22:42	7440-48-4	
Copper	186	ug/L	1.0	0.12	1	07/31/13 10:10	08/09/13 22:42	7440-50-8	
Lead	14.8	ug/L	1.0	0.030	1	07/31/13 10:10	08/09/13 22:42	7439-92-1	
Manganese	1910	ug/L	1.0	0.14	1	07/31/13 10:10	08/09/13 22:42	7439-96-5	M1
Nickel	2.8	ug/L	1.0	0.070	1	07/31/13 10:10	08/09/13 22:42	7440-02-0	
Selenium	0.24J	ug/L	1.0	0.14	1	07/31/13 10:10	08/09/13 22:42	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.10J	ug/L	1.0	0.050	1	07/31/13 10:10	08/09/13 21:57	7440-38-2	
Cadmium, Dissolved	17.8	ug/L	0.50	0.050	1	07/31/13 10:10	08/09/13 21:57	7440-43-9	
Chromium, Dissolved	ND	ug/L	1.0	0.070	1	07/31/13 10:10	08/09/13 21:57	7440-47-3	
Cobalt, Dissolved	2.8	ug/L	1.0	0.080	1	07/31/13 10:10	08/09/13 21:57	7440-48-4	D9
Copper, Dissolved	7.0	ug/L	1.0	0.12	1	08/13/13 10:37	08/13/13 17:32	7440-50-8	
Lead, Dissolved	0.22J	ug/L	1.0	0.030	1	07/31/13 10:10	08/09/13 21:57	7439-92-1	B
Manganese, Dissolved	1880	ug/L	1.0	0.14	1	07/31/13 10:10	08/09/13 21:57	7439-96-5	M1
Nickel, Dissolved	2.3	ug/L	1.0	0.070	1	08/13/13 10:37	08/13/13 17:32	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	07/31/13 10:10	08/09/13 21:57	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/31/13 10:45	07/31/13 14:18	7439-97-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149890

Sample: DR3A1307280400 Lab ID: 60149890002 Collected: 07/28/13 04:00 Received: 07/30/13 10:00 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved									
Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/31/13 10:45	07/31/13 13:51	7439-97-6	
2320B Alkalinity									
Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	113	mg/L	20.0	4.9	1		08/05/13 09:57		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	4.9	1		08/05/13 09:57		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	4.9	1		08/05/13 09:57		
Alkalinity, Total as CaCO ₃	113	mg/L	20.0	4.9	1		08/05/13 09:57		
300.0 IC Anions 28 Days									
Analytical Method: EPA 300.0									
Bromide	ND	mg/L	1.0	0.090	1		08/05/13 12:00	24959-67-9	
Chloride	0.89J	mg/L	1.0	0.50	1		08/05/13 12:00	16887-00-6	
Fluoride	2.3	mg/L	0.20	0.047	1		08/05/13 12:00	16984-48-8	
Sulfate	661	mg/L	50.0	8.0	50		08/05/13 12:14	14808-79-8	

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILITY

Pace Project No.: 60149890

Sample: DR3A1307291200 Lab ID: 60149890003 Collected: 07/29/13 12:00 Received: 07/30/13 10:00 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	890	ug/L	75.0	16.6	1	07/31/13 10:10	08/02/13 10:42	7429-90-5	
Calcium	235000	ug/L	100	10.4	1	07/31/13 10:10	08/02/13 10:42	7440-70-2	
Iron	8250	ug/L	50.0	11.6	1	07/31/13 10:10	08/02/13 10:42	7439-89-6	
Lithium	25.1	ug/L	10.0	2.4	1	07/31/13 10:10	08/02/13 10:42	7439-93-2	
Magnesium	18900	ug/L	50.0	6.5	1	07/31/13 10:10	08/02/13 10:42	7439-95-4	
Potassium	3420	ug/L	500	44.4	1	07/31/13 10:10	08/02/13 10:42	7440-09-7	
Silicon	8110	ug/L	500	23.9	1	07/31/13 10:10	08/02/13 10:42	7440-21-3	
Sodium	18100	ug/L	500	21.7	1	07/31/13 10:10	08/02/13 10:42	7440-23-5	
Zinc	3780	ug/L	50.0	3.3	1	07/31/13 10:10	08/02/13 10:42	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	92.9	ug/L	75.0	16.6	1	07/31/13 10:10	08/02/13 11:17	7429-90-5	
Calcium, Dissolved	234000	ug/L	100	10.4	1	07/31/13 10:10	08/02/13 11:17	7440-70-2	
Iron, Dissolved	529	ug/L	50.0	11.6	1	07/31/13 10:10	08/02/13 11:17	7439-89-6	
Lithium, Dissolved	23.2	ug/L	10.0	2.4	1	07/31/13 10:10	08/02/13 11:17	7439-93-2	
Magnesium, Dissolved	18600	ug/L	50.0	6.5	1	07/31/13 10:10	08/02/13 11:17	7439-95-4	
Potassium, Dissolved	3430	ug/L	500	44.4	1	07/31/13 10:10	08/02/13 11:17	7440-09-7	D9
Silicon, Dissolved	7340	ug/L	500	23.9	1	07/31/13 10:10	08/02/13 11:17	7440-21-3	
Sodium, Dissolved	18100	ug/L	500	21.7	1	07/31/13 10:10	08/02/13 11:17	7440-23-5	
Zinc, Dissolved	3400	ug/L	50.0	3.3	1	07/31/13 10:10	08/02/13 11:17	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.4	ug/L	1.0	0.050	1	07/31/13 10:10	08/09/13 22:59	7440-38-2	
Cadmium	20.5	ug/L	0.50	0.050	1	07/31/13 10:10	08/09/13 22:59	7440-43-9	
Chromium	0.54J	ug/L	1.0	0.070	1	07/31/13 10:10	08/09/13 22:59	7440-47-3	B
Cobalt	2.4	ug/L	1.0	0.080	1	07/31/13 10:10	08/09/13 22:59	7440-48-4	
Copper	183	ug/L	1.0	0.12	1	07/31/13 10:10	08/09/13 22:59	7440-50-8	
Lead	14.6	ug/L	1.0	0.030	1	07/31/13 10:10	08/09/13 22:59	7439-92-1	
Manganese	1850	ug/L	1.0	0.14	1	07/31/13 10:10	08/09/13 22:59	7439-96-5	
Nickel	3.0	ug/L	1.0	0.070	1	07/31/13 10:10	08/09/13 22:59	7440-02-0	
Selenium	0.24J	ug/L	1.0	0.14	1	07/31/13 10:10	08/09/13 22:59	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.13J	ug/L	1.0	0.050	1	07/31/13 10:10	08/09/13 22:13	7440-38-2	
Cadmium, Dissolved	18.9	ug/L	0.50	0.050	1	07/31/13 10:10	08/09/13 22:13	7440-43-9	
Chromium, Dissolved	ND	ug/L	1.0	0.070	1	07/31/13 10:10	08/09/13 22:13	7440-47-3	
Cobalt, Dissolved	2.7	ug/L	1.0	0.080	1	07/31/13 10:10	08/09/13 22:13	7440-48-4	D9
Copper, Dissolved	12.6	ug/L	1.0	0.12	1	07/31/13 10:10	08/09/13 22:13	7440-50-8	
Lead, Dissolved	0.45J	ug/L	1.0	0.030	1	07/31/13 10:10	08/09/13 22:13	7439-92-1	B
Manganese, Dissolved	1860	ug/L	1.0	0.14	1	07/31/13 10:10	08/09/13 22:13	7439-96-5	D9
Nickel, Dissolved	2.3	ug/L	1.0	0.070	1	08/13/13 10:37	08/13/13 17:36	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	07/31/13 10:10	08/09/13 22:13	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/31/13 10:45	07/31/13 14:20	7439-97-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149890

Sample: DR3A1307291200		Lab ID: 60149890003		Collected: 07/29/13 12:00		Received: 07/30/13 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/31/13 10:45	07/31/13 13:54	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	121	mg/L	20.0	4.9	1		08/05/13 10:05		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	4.9	1		08/05/13 10:05		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	4.9	1		08/05/13 10:05		
Alkalinity, Total as CaCO ₃	121	mg/L	20.0	4.9	1		08/05/13 10:05		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.090	1		08/05/13 12:29	24959-67-9	
Chloride	0.90J	mg/L	1.0	0.50	1		08/05/13 12:29	16887-00-6	
Fluoride	2.3	mg/L	0.20	0.047	1		08/05/13 12:29	16984-48-8	
Sulfate	676	mg/L	50.0	8.0	50		08/05/13 12:43	14808-79-8	

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILITY

Pace Project No.: 60149890

Sample: DUP1307291200 Lab ID: 60149890004 Collected: 07/29/13 12:00 Received: 07/30/13 10:00 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	927	ug/L	75.0	16.6	1	07/31/13 10:10	08/02/13 10:45	7429-90-5	
Calcium	241000	ug/L	100	10.4	1	07/31/13 10:10	08/02/13 10:45	7440-70-2	
Iron	8450	ug/L	50.0	11.6	1	07/31/13 10:10	08/02/13 10:45	7439-89-6	
Lithium	23.4	ug/L	10.0	2.4	1	07/31/13 10:10	08/02/13 10:45	7439-93-2	
Magnesium	19500	ug/L	50.0	6.5	1	07/31/13 10:10	08/02/13 10:45	7439-95-4	
Potassium	3490	ug/L	500	44.4	1	07/31/13 10:10	08/02/13 10:45	7440-09-7	
Silicon	8330	ug/L	500	23.9	1	07/31/13 10:10	08/02/13 10:45	7440-21-3	
Sodium	18500	ug/L	500	21.7	1	07/31/13 10:10	08/02/13 10:45	7440-23-5	
Zinc	3960	ug/L	50.0	3.3	1	07/31/13 10:10	08/02/13 10:45	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	79.1	ug/L	75.0	16.6	1	07/31/13 10:10	08/02/13 11:20	7429-90-5	
Calcium, Dissolved	234000	ug/L	100	10.4	1	07/31/13 10:10	08/02/13 11:20	7440-70-2	
Iron, Dissolved	504	ug/L	50.0	11.6	1	07/31/13 10:10	08/02/13 11:20	7439-89-6	
Lithium, Dissolved	23.6	ug/L	10.0	2.4	1	07/31/13 10:10	08/02/13 11:20	7439-93-2	D9
Magnesium, Dissolved	18100	ug/L	50.0	6.5	1	07/31/13 10:10	08/02/13 11:20	7439-95-4	
Potassium, Dissolved	3430	ug/L	500	44.4	1	07/31/13 10:10	08/02/13 11:20	7440-09-7	
Silicon, Dissolved	7310	ug/L	500	23.9	1	07/31/13 10:10	08/02/13 11:20	7440-21-3	
Sodium, Dissolved	18200	ug/L	500	21.7	1	07/31/13 10:10	08/02/13 11:20	7440-23-5	
Zinc, Dissolved	3400	ug/L	50.0	3.3	1	07/31/13 10:10	08/02/13 11:20	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.3	ug/L	1.0	0.050	1	07/31/13 10:10	08/09/13 23:03	7440-38-2	
Cadmium	21.0	ug/L	0.50	0.050	1	07/31/13 10:10	08/09/13 23:03	7440-43-9	
Chromium	0.87J	ug/L	1.0	0.070	1	07/31/13 10:10	08/09/13 23:03	7440-47-3	B
Cobalt	2.4	ug/L	1.0	0.080	1	07/31/13 10:10	08/09/13 23:03	7440-48-4	
Copper	187	ug/L	1.0	0.12	1	07/31/13 10:10	08/09/13 23:03	7440-50-8	
Lead	14.9	ug/L	1.0	0.030	1	07/31/13 10:10	08/09/13 23:03	7439-92-1	
Manganese	1880	ug/L	1.0	0.14	1	07/31/13 10:10	08/09/13 23:03	7439-96-5	
Nickel	6.1	ug/L	1.0	0.070	1	07/31/13 10:10	08/09/13 23:03	7440-02-0	
Selenium	0.21J	ug/L	1.0	0.14	1	07/31/13 10:10	08/09/13 23:03	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.18J	ug/L	1.0	0.050	1	07/31/13 10:10	08/09/13 22:18	7440-38-2	
Cadmium, Dissolved	18.7	ug/L	0.50	0.050	1	07/31/13 10:10	08/09/13 22:18	7440-43-9	
Chromium, Dissolved	ND	ug/L	1.0	0.070	1	07/31/13 10:10	08/09/13 22:18	7440-47-3	
Cobalt, Dissolved	2.9	ug/L	1.0	0.080	1	07/31/13 10:10	08/09/13 22:18	7440-48-4	D9
Copper, Dissolved	10.3	ug/L	1.0	0.12	1	08/13/13 10:37	08/13/13 17:48	7440-50-8	
Lead, Dissolved	0.25J	ug/L	1.0	0.030	1	07/31/13 10:10	08/09/13 22:18	7439-92-1	B
Manganese, Dissolved	1860	ug/L	1.0	0.14	1	07/31/13 10:10	08/09/13 22:18	7439-96-5	
Nickel, Dissolved	2.4	ug/L	1.0	0.070	1	08/13/13 10:37	08/13/13 17:48	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	07/31/13 10:10	08/09/13 22:18	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	07/31/13 10:45	07/31/13 14:27	7439-97-6	

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149890

Sample: DUP1307291200		Lab ID: 60149890004		Collected: 07/29/13 12:00		Received: 07/30/13 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	07/31/13 10:45	07/31/13 14:00	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	116	mg/L	20.0	4.9	1		08/05/13 10:09		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	4.9	1		08/05/13 10:09		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	4.9	1		08/05/13 10:09		
Alkalinity, Total as CaCO ₃	116	mg/L	20.0	4.9	1		08/05/13 10:09		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.090	1		08/05/13 12:57	24959-67-9	
Chloride	0.89J	mg/L	1.0	0.50	1		08/05/13 12:57	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.047	1		08/05/13 12:57	16984-48-8	
Sulfate	669	mg/L	50.0	8.0	50		08/05/13 13:26	14808-79-8	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149890

QC Batch: MERP/7554

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury

Associated Lab Samples: 60149890001, 60149890002, 60149890003, 60149890004

METHOD BLANK: 1228436

Matrix: Water

Associated Lab Samples: 60149890001, 60149890002, 60149890003, 60149890004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	07/31/13 14:02	

LABORATORY CONTROL SAMPLE: 1228437

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.1	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1228438

1228439

Parameter	Units	60149890003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	5.0	5.2	99	103	70-130	4	20	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149890

QC Batch: MERP/7553 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury - Dissolved
Associated Lab Samples: 60149890001, 60149890002, 60149890003, 60149890004

METHOD BLANK: 1228432 Matrix: Water
Associated Lab Samples: 60149890001, 60149890002, 60149890003, 60149890004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	07/31/13 13:40	

LABORATORY CONTROL SAMPLE: 1228433

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	4.9	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1228434 1228435

Parameter	Units	60149890003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury, Dissolved	ug/L	ND	5	5	4.7	4.6	92	91	70-130	1	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149890

QC Batch: MPRP/23675 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60149890001, 60149890002, 60149890003, 60149890004

METHOD BLANK: 1228341 Matrix: Water

Associated Lab Samples: 60149890001, 60149890002, 60149890003, 60149890004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	08/02/13 10:20	
Calcium	ug/L	12.4J	100	08/02/13 10:20	
Iron	ug/L	ND	50.0	08/02/13 10:20	
Lithium	ug/L	ND	10.0	08/02/13 10:20	
Magnesium	ug/L	ND	50.0	08/02/13 10:20	
Potassium	ug/L	ND	500	08/02/13 10:20	
Silicon	ug/L	ND	500	08/02/13 10:20	
Sodium	ug/L	ND	500	08/02/13 10:20	
Zinc	ug/L	ND	50.0	08/02/13 10:20	

LABORATORY CONTROL SAMPLE: 1228342

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	10200	102	85-115	
Calcium	ug/L	10000	9560	96	85-115	
Iron	ug/L	10000	10000	100	85-115	
Lithium	ug/L	1000	1000	100	85-115	
Magnesium	ug/L	10000	9170	92	85-115	
Potassium	ug/L	10000	9480	95	85-115	
Silicon	ug/L	5000	4740	95	85-115	
Sodium	ug/L	10000	9770	98	85-115	
Zinc	ug/L	1000	952	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1228343 1228344

Parameter	Units	60149890001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	1000	10000	10000	11000	11100	100	101	70-130	1	8	
Calcium	ug/L	227000	10000	10000	234000	240000	69	136	70-130	3	9 M1	
Iron	ug/L	9960	10000	10000	19400	19800	94	98	70-130	2	10	
Lithium	ug/L	22.2	1000	1000	1050	1070	103	105	70-130	2	20	
Magnesium	ug/L	17600	10000	10000	26900	27200	93	96	70-130	1	9	
Potassium	ug/L	3320	10000	10000	13100	13400	98	100	70-130	2	7	
Silicon	ug/L	8020	5000	5000	12800	13100	95	101	70-130	2	5	
Sodium	ug/L	18000	10000	10000	27900	28400	98	104	70-130	2	8	
Zinc	ug/L	3830	1000	1000	4740	4830	91	100	70-130	2	11	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149890

QC Batch: MPRP/23676

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60149890001, 60149890002, 60149890003, 60149890004

METHOD BLANK: 1228349

Matrix: Water

Associated Lab Samples: 60149890001, 60149890002, 60149890003, 60149890004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	08/02/13 10:58	
Calcium, Dissolved	ug/L	12.5J	100	08/02/13 10:58	
Iron, Dissolved	ug/L	ND	50.0	08/02/13 10:58	
Lithium, Dissolved	ug/L	ND	10.0	08/02/13 10:58	
Magnesium, Dissolved	ug/L	ND	50.0	08/02/13 10:58	
Potassium, Dissolved	ug/L	ND	500	08/02/13 10:58	
Silicon, Dissolved	ug/L	ND	500	08/02/13 10:58	
Sodium, Dissolved	ug/L	ND	500	08/02/13 10:58	
Zinc, Dissolved	ug/L	ND	50.0	08/02/13 10:58	

LABORATORY CONTROL SAMPLE: 1228350

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	10000	100	85-115	
Calcium, Dissolved	ug/L	10000	9670	97	85-115	
Iron, Dissolved	ug/L	10000	9860	99	85-115	
Lithium, Dissolved	ug/L	1000	991	99	85-115	
Magnesium, Dissolved	ug/L	10000	9310	93	85-115	
Potassium, Dissolved	ug/L	10000	9660	97	85-115	
Silicon, Dissolved	ug/L	5000	4860	97	85-115	
Sodium, Dissolved	ug/L	10000	9830	98	85-115	
Zinc, Dissolved	ug/L	1000	966	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1228351

1228352

Parameter	Units	60149890001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	74.7J	10000	10000	9850	10200	98	101	70-130	3	8	
Calcium, Dissolved	ug/L	239000	10000	10000	241000	238000	17	-15	70-130	1	9 M1	
Iron, Dissolved	ug/L	ND	10000	10000	9550	9790	96	98	70-130	2	10	
Lithium, Dissolved	ug/L	23.2	1000	1000	993	1050	97	102	70-130	5	20	
Magnesium, Dissolved	ug/L	19200	10000	10000	28800	27000	96	78	70-130	6	9	
Potassium, Dissolved	ug/L	3510	10000	10000	12900	13200	94	97	70-130	2	7	
Silicon, Dissolved	ug/L	7220	5000	5000	11800	11800	91	91	70-130	0	5	
Sodium, Dissolved	ug/L	19000	10000	10000	27600	28200	86	92	70-130	2	8	
Zinc, Dissolved	ug/L	3180	1000	1000	4070	3880	89	70	70-130	5	11	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149890

QC Batch: MPRP/23678 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60149890001, 60149890002, 60149890003, 60149890004

METHOD BLANK: 1228361 Matrix: Water

Associated Lab Samples: 60149890001, 60149890002, 60149890003, 60149890004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	08/09/13 22:34	
Cadmium	ug/L	ND	0.50	08/09/13 22:34	
Chromium	ug/L	0.40J	1.0	08/09/13 22:34	
Cobalt	ug/L	ND	1.0	08/09/13 22:34	
Copper	ug/L	0.34J	1.0	08/09/13 22:34	
Lead	ug/L	0.21J	1.0	08/09/13 22:34	
Manganese	ug/L	0.29J	1.0	08/09/13 22:34	
Nickel	ug/L	0.18J	1.0	08/09/13 22:34	
Selenium	ug/L	ND	1.0	08/09/13 22:34	

LABORATORY CONTROL SAMPLE: 1228362

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	40.4	101	85-115	
Cadmium	ug/L	40	40.0	100	85-115	
Chromium	ug/L	40	39.3	98	85-115	
Cobalt	ug/L	40	39.2	98	85-115	
Copper	ug/L	40	39.2	98	85-115	
Lead	ug/L	40	39.8	99	85-115	
Manganese	ug/L	40	40.5	101	85-115	
Nickel	ug/L	40	39.6	99	85-115	
Selenium	ug/L	40	40.6	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1228363 1228364

Parameter	Units	60149890002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	1.4	40	40	42.3	43.0	102	104	70-130	2	20	
Cadmium	ug/L	21.2	40	40	59.4	58.8	95	94	70-130	1	20	
Chromium	ug/L	0.53J	40	40	39.2	39.1	97	97	70-130	0	20	
Cobalt	ug/L	2.4	40	40	40.6	40.3	95	95	70-130	1	20	
Copper	ug/L	186	40	40	219	217	82	76	70-130	1	20	
Lead	ug/L	14.8	40	40	55.2	54.4	101	99	70-130	2	20	
Manganese	ug/L	1910	40	40	1920	1880	30	-52	70-130	2	20 M1	
Nickel	ug/L	2.8	40	40	40.4	39.8	94	93	70-130	1	20	
Selenium	ug/L	0.24J	40	40	40.3	40.9	100	102	70-130	1	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149890

QC Batch: MPRP/23677 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60149890001, 60149890002, 60149890003, 60149890004

METHOD BLANK: 1228357 Matrix: Water
Associated Lab Samples: 60149890001, 60149890002, 60149890003, 60149890004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	08/09/13 21:44	
Cadmium, Dissolved	ug/L	ND	0.50	08/09/13 21:44	
Chromium, Dissolved	ug/L	0.27J	1.0	08/09/13 21:44	
Cobalt, Dissolved	ug/L	ND	1.0	08/09/13 21:44	
Copper, Dissolved	ug/L	0.68J	1.0	08/09/13 21:44	
Lead, Dissolved	ug/L	0.21J	1.0	08/09/13 21:44	
Manganese, Dissolved	ug/L	0.26J	1.0	08/09/13 21:44	
Selenium, Dissolved	ug/L	ND	1.0	08/09/13 21:44	

LABORATORY CONTROL SAMPLE: 1228358

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	41.1	103	85-115	
Cadmium, Dissolved	ug/L	40	40.2	100	85-115	
Chromium, Dissolved	ug/L	40	41.3	103	85-115	
Cobalt, Dissolved	ug/L	40	40.4	101	85-115	
Copper, Dissolved	ug/L	40	41.2	103	85-115	
Lead, Dissolved	ug/L	40	40.0	100	85-115	
Manganese, Dissolved	ug/L	40	40.8	102	85-115	
Selenium, Dissolved	ug/L	40	40.3	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1228359 1228360

Parameter	Units	60149890002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	0.10J	40	40	41.6	42.4	104	106	70-130	2	20	
Cadmium, Dissolved	ug/L	17.8	40	40	55.9	57.1	95	98	70-130	2	20	
Chromium, Dissolved	ug/L	ND	40	40	38.8	39.5	97	99	70-130	2	20	
Cobalt, Dissolved	ug/L	2.8	40	40	40.7	41.5	95	97	70-130	2	20	
Copper, Dissolved	ug/L	7.0			42.8	43.4				1	20	
Lead, Dissolved	ug/L	0.22J	40	40	40.1	40.6	100	101	70-130	1	20	
Manganese, Dissolved	ug/L	1880	40	40	1870	1930	-18	148	70-130	3	20 M1	
Selenium, Dissolved	ug/L	ND	40	40	40.3	42.0	100	105	70-130	4	20	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149890

QC Batch: MPRP/23814 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60149890001, 60149890002, 60149890003, 60149890004

METHOD BLANK: 1235390 Matrix: Water

Associated Lab Samples: 60149890001, 60149890002, 60149890003, 60149890004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Copper, Dissolved	ug/L	ND	1.0	08/13/13 17:19	
Nickel, Dissolved	ug/L	ND	1.0	08/13/13 17:19	

LABORATORY CONTROL SAMPLE: 1235391

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper, Dissolved	ug/L	40	40.4	101	85-115	
Nickel, Dissolved	ug/L	40	40.3	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1235392 1235393

Parameter	Units	60149890004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Copper, Dissolved	ug/L	10.3	40	40	48.1	47.9	94	94	70-130	0	20	
Nickel, Dissolved	ug/L	2.4	40	40	39.9	40.6	94	95	70-130	2	20	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149890

QC Batch: WET/42709 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60149890001, 60149890002, 60149890003, 60149890004

METHOD BLANK: 1230918 Matrix: Water

Associated Lab Samples: 60149890001, 60149890002, 60149890003, 60149890004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	08/05/13 09:49	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	08/05/13 09:49	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	08/05/13 09:49	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	08/05/13 09:49	

LABORATORY CONTROL SAMPLE: 1230919

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	488	98	90-110	

SAMPLE DUPLICATE: 1230922

Parameter	Units	60149890002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	113	116	3	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	113	116	3	10	

SAMPLE DUPLICATE: 1230923

Parameter	Units	60149827002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	270	264	2	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	270	264	2	10	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149890

QC Batch: WETA/25675 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60149890001, 60149890002, 60149890003, 60149890004

METHOD BLANK: 1230987 Matrix: Water
Associated Lab Samples: 60149890001, 60149890002, 60149890003, 60149890004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	08/05/13 09:12	
Chloride	mg/L	ND	1.0	08/05/13 09:12	
Fluoride	mg/L	ND	0.20	08/05/13 09:12	
Sulfate	mg/L	ND	1.0	08/05/13 09:12	

LABORATORY CONTROL SAMPLE: 1230988

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.0	99	90-110	
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	2.5	2.5	99	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1230989 1230990

Parameter	Units	60149649006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Bromide	mg/L	ND	500	500	494	491	99	98	75-119	1	10
Chloride	mg/L	ND	500	500	488	480	98	96	64-118	2	12
Fluoride	mg/L	ND	250	250	254	253	102	101	75-110	0	10
Sulfate	mg/L	1210	500	500	1400	1400	37	38	61-119	0	10 M1

MATRIX SPIKE SAMPLE: 1230991

Parameter	Units	60149890004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	5	5.0	100	75-119	
Chloride	mg/L	0.89J	5	5.3	87	64-118	
Fluoride	mg/L	2.2	2.5	4.9	106	75-110	
Sulfate	mg/L	669	250	877	83	61-119	

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QUALIFIERS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149890

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60149890

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60149890001	DR3A1307270400	EPA 200.7	MPRP/23675	EPA 200.7	ICP/18573
60149890002	DR3A1307280400	EPA 200.7	MPRP/23675	EPA 200.7	ICP/18573
60149890003	DR3A1307291200	EPA 200.7	MPRP/23675	EPA 200.7	ICP/18573
60149890004	DUP1307291200	EPA 200.7	MPRP/23675	EPA 200.7	ICP/18573
60149890001	DR3A1307270400	EPA 200.7	MPRP/23676	EPA 200.7	ICP/18572
60149890002	DR3A1307280400	EPA 200.7	MPRP/23676	EPA 200.7	ICP/18572
60149890003	DR3A1307291200	EPA 200.7	MPRP/23676	EPA 200.7	ICP/18572
60149890004	DUP1307291200	EPA 200.7	MPRP/23676	EPA 200.7	ICP/18572
60149890001	DR3A1307270400	EPA 200.8	MPRP/23678	EPA 200.8	ICPM/2424
60149890002	DR3A1307280400	EPA 200.8	MPRP/23678	EPA 200.8	ICPM/2424
60149890003	DR3A1307291200	EPA 200.8	MPRP/23678	EPA 200.8	ICPM/2424
60149890004	DUP1307291200	EPA 200.8	MPRP/23678	EPA 200.8	ICPM/2424
60149890001	DR3A1307270400	EPA 200.8	MPRP/23677	EPA 200.8	ICPM/2423
60149890001	DR3A1307270400	EPA 200.8	MPRP/23814	EPA 200.8	ICPM/2442
60149890002	DR3A1307280400	EPA 200.8	MPRP/23677	EPA 200.8	ICPM/2423
60149890002	DR3A1307280400	EPA 200.8	MPRP/23814	EPA 200.8	ICPM/2442
60149890003	DR3A1307291200	EPA 200.8	MPRP/23677	EPA 200.8	ICPM/2423
60149890003	DR3A1307291200	EPA 200.8	MPRP/23814	EPA 200.8	ICPM/2442
60149890004	DUP1307291200	EPA 200.8	MPRP/23677	EPA 200.8	ICPM/2423
60149890004	DUP1307291200	EPA 200.8	MPRP/23814	EPA 200.8	ICPM/2442
60149890001	DR3A1307270400	EPA 245.1	MERP/7554	EPA 245.1	MERC/7511
60149890002	DR3A1307280400	EPA 245.1	MERP/7554	EPA 245.1	MERC/7511
60149890003	DR3A1307291200	EPA 245.1	MERP/7554	EPA 245.1	MERC/7511
60149890004	DUP1307291200	EPA 245.1	MERP/7554	EPA 245.1	MERC/7511
60149890001	DR3A1307270400	EPA 245.1	MERP/7553	EPA 245.1	MERC/7510
60149890002	DR3A1307280400	EPA 245.1	MERP/7553	EPA 245.1	MERC/7510
60149890003	DR3A1307291200	EPA 245.1	MERP/7553	EPA 245.1	MERC/7510
60149890004	DUP1307291200	EPA 245.1	MERP/7553	EPA 245.1	MERC/7510
60149890001	DR3A1307270400	SM 2320B	WET/42709		
60149890002	DR3A1307280400	SM 2320B	WET/42709		
60149890003	DR3A1307291200	SM 2320B	WET/42709		
60149890004	DUP1307291200	SM 2320B	WET/42709		
60149890001	DR3A1307270400	EPA 300.0	WETA/25675		
60149890002	DR3A1307280400	EPA 300.0	WETA/25675		
60149890003	DR3A1307291200	EPA 300.0	WETA/25675		
60149890004	DUP1307291200	EPA 300.0	WETA/25675		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt
ESI Tech Spec Client

WO#: 60149890



Client Name: BP AMEC

Courier: Fed Ex ☒ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 1Z733W87448555702 Pace Shipping Label Used? Yes ☐ No ☒

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☒ 12PIL

Thermometer Used: T-112 / T-194

Type of Ice: Wet Blue ☐ None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 1.1/0.9

Date and initials of person examining contents: pu H/30/13

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Filtered volume received for dissolved tests?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Includes date/time/ID/analyses	Matrix: <u>WT</u>	15.
All containers needing preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	16.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	17.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:

Client Notification/ Resolution:

Copy COC to Client? Y ☒ N ☐ Field Data Required? Y ☐ N ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [Signature]

Date: 7/30/13

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: <u>1143</u>	Start:
End: <u>1146</u>	End:
Temp:	Temp:



70149890

BP/ARC LaMP COC Rev. 6 01/01/2009

August 12, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: Rico-Argentine Mine Site
Pace Project No.: 60150186

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on August 02, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Rico-Argentine Mine Site

Pace Project No.: 60150186

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Rico-Argentine Mine Site

Pace Project No.: 60150186

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60150186001	DR3A1307300400	Water	07/30/13 04:00	08/02/13 10:00
60150186002	DR3A1308011200	Water	08/01/13 12:00	08/02/13 10:00

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SAMPLE ANALYTE COUNT

Project: Rico-Argentine Mine Site

Pace Project No.: 60150186

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60150186001	DR3A1307300400	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60150186002	DR3A1308011200	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60150186

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: August 12, 2013

General Information:

2 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23731

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60150186001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1231542)
- Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60150186

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: August 12, 2013

General Information:

2 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23732

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60150186001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1231546)
 - Calcium, Dissolved
- MSD (Lab ID: 1231547)
 - Calcium, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60150186

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: August 12, 2013

General Information:

2 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23729

B: Analyte was detected in the associated method blank.

- BLANK for HBN 301544 [MPRP/237 (Lab ID: 1231529)]
- Chromium

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23729

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60150186002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1231531)
- Manganese

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60150186

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: August 12, 2013

General Information:

2 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23730

B: Analyte was detected in the associated method blank.

- BLANK for HBN 301545 [MPRP/237 (Lab ID: 1231533)]
- Chromium, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23730

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60150186002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1231535)
 - Manganese, Dissolved
- MSD (Lab ID: 1231536)
 - Manganese, Dissolved

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60150186

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: August 12, 2013

General Information:

2 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60150186

Method: EPA 245.1

Description: 245.1 Mercury, Dissolved

Client: BP AMEC

Date: August 12, 2013

General Information:

2 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60150186

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: August 12, 2013

General Information:

2 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60150186

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: August 12, 2013

General Information:

2 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: WETA/25707

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60149642001,60149827003

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1232083)
 - Sulfate
- MS (Lab ID: 1232085)
 - Sulfate
- MSD (Lab ID: 1232084)
 - Sulfate

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60150186

Sample: DR3A1307300400			Lab ID: 60150186001		Collected: 07/30/13 04:00		Received: 08/02/13 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual	
200.7 Metals, Total			Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum	778	ug/L	75.0	16.6	1	08/06/13 12:25	08/07/13 16:42	7429-90-5	M1	
Calcium	240000	ug/L	100	10.4	1	08/06/13 12:25	08/07/13 16:42	7440-70-2		
Iron	8080	ug/L	50.0	11.6	1	08/06/13 12:25	08/08/13 10:38	7439-89-6		
Lithium	24.7	ug/L	10.0	2.4	1	08/06/13 12:25	08/07/13 16:42	7439-93-2		
Magnesium	19300	ug/L	50.0	6.5	1	08/06/13 12:25	08/08/13 10:38	7439-95-4		
Potassium	3360	ug/L	500	44.4	1	08/06/13 12:25	08/07/13 16:42	7440-09-7		
Silicon	8210	ug/L	500	23.9	1	08/06/13 12:25	08/07/13 16:42	7440-21-3		
Sodium	18600	ug/L	500	21.7	1	08/06/13 12:25	08/08/13 10:38	7440-23-5		
Zinc	3880	ug/L	50.0	3.3	1	08/06/13 12:25	08/07/13 16:42	7440-66-6		
200.7 Metals, Dissolved			Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	74.1J	ug/L	75.0	16.6	1	08/06/13 12:25	08/07/13 17:04	7429-90-5	M1	
Calcium, Dissolved	238000	ug/L	100	10.4	1	08/06/13 12:25	08/07/13 17:04	7440-70-2		
Iron, Dissolved	ND	ug/L	50.0	11.6	1	08/06/13 12:25	08/08/13 10:53	7439-89-6	D9	
Lithium, Dissolved	24.8	ug/L	10.0	2.4	1	08/06/13 12:25	08/07/13 17:04	7439-93-2		
Magnesium, Dissolved	19200	ug/L	50.0	6.5	1	08/06/13 12:25	08/08/13 10:53	7439-95-4		
Potassium, Dissolved	3360	ug/L	500	44.4	1	08/06/13 12:25	08/07/13 17:04	7440-09-7		
Silicon, Dissolved	7400	ug/L	500	23.9	1	08/06/13 12:25	08/07/13 17:04	7440-21-3		
Sodium, Dissolved	18100	ug/L	500	21.7	1	08/06/13 12:25	08/08/13 10:53	7440-23-5		
Zinc, Dissolved	3350	ug/L	50.0	3.3	1	08/06/13 12:25	08/07/13 17:04	7440-66-6		
200.8 MET ICPMS			Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Arsenic	1.3	ug/L	1.0	0.050	1	08/06/13 12:25	08/09/13 15:08	7440-38-2	B	
Cadmium	20.9	ug/L	0.50	0.050	1	08/06/13 12:25	08/09/13 15:08	7440-43-9		
Chromium	0.60J	ug/L	1.0	0.070	1	08/06/13 12:25	08/09/13 15:08	7440-47-3		
Cobalt	2.7	ug/L	1.0	0.080	1	08/06/13 12:25	08/09/13 15:08	7440-48-4		
Copper	171	ug/L	1.0	0.12	1	08/06/13 12:25	08/09/13 15:08	7440-50-8		
Lead	13.8	ug/L	1.0	0.030	1	08/06/13 12:25	08/09/13 15:08	7439-92-1		
Manganese	1880	ug/L	1.0	0.14	1	08/06/13 12:25	08/09/13 15:08	7439-96-5		
Nickel	4.2	ug/L	1.0	0.070	1	08/06/13 12:25	08/09/13 15:08	7440-02-0		
Selenium	0.23J	ug/L	1.0	0.14	1	08/06/13 12:25	08/09/13 15:08	7782-49-2		
200.8 MET ICPMS, Dissolved			Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Arsenic, Dissolved	0.16J	ug/L	1.0	0.050	1	08/06/13 12:25	08/09/13 16:12	7440-38-2	B D9	
Cadmium, Dissolved	18.2	ug/L	0.50	0.050	1	08/06/13 12:25	08/09/13 16:12	7440-43-9		
Chromium, Dissolved	0.17J	ug/L	1.0	0.070	1	08/06/13 12:25	08/09/13 16:12	7440-47-3		
Cobalt, Dissolved	3.0	ug/L	1.0	0.080	1	08/06/13 12:25	08/09/13 16:12	7440-48-4		
Copper, Dissolved	7.7	ug/L	1.0	0.12	1	08/06/13 12:25	08/09/13 16:12	7440-50-8		
Lead, Dissolved	ND	ug/L	1.0	0.030	1	08/06/13 12:25	08/09/13 16:12	7439-92-1		
Manganese, Dissolved	1840	ug/L	1.0	0.14	1	08/06/13 12:25	08/09/13 16:12	7439-96-5		
Nickel, Dissolved	4.1	ug/L	1.0	0.070	1	08/06/13 12:25	08/09/13 16:12	7440-02-0		
Selenium, Dissolved	0.14J	ug/L	1.0	0.14	1	08/06/13 12:25	08/09/13 16:12	7782-49-2		
245.1 Mercury			Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	ND	ug/L	0.20	0.14	1	08/05/13 11:00	08/06/13 10:30	7439-97-6		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60150186

Sample: DR3A1307300400 Lab ID: 60150186001 Collected: 07/30/13 04:00 Received: 08/02/13 10:00 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	08/05/13 11:00	08/06/13 10:12	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	120	mg/L	20.0	4.9	1		08/05/13 11:02		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	4.9	1		08/05/13 11:02		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	4.9	1		08/05/13 11:02		
Alkalinity, Total as CaCO ₃	120	mg/L	20.0	4.9	1		08/05/13 11:02		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	ND	mg/L	1.0	0.090	1		08/08/13 18:32	24959-67-9	
Chloride	0.89J	mg/L	1.0	0.50	1		08/08/13 18:32	16887-00-6	
Fluoride	2.5	mg/L	0.20	0.047	1		08/08/13 18:32	16984-48-8	
Sulfate	623	mg/L	50.0	8.0	50		08/08/13 18:48	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60150186

Sample: DR3A1308011200 Lab ID: 60150186002 Collected: 08/01/13 12:00 Received: 08/02/13 10:00 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	844	ug/L	75.0	16.6	1	08/06/13 12:25	08/07/13 16:55	7429-90-5	
Calcium	241000	ug/L	100	10.4	1	08/06/13 12:25	08/07/13 16:55	7440-70-2	
Iron	8250	ug/L	50.0	11.6	1	08/06/13 12:25	08/08/13 10:50	7439-89-6	
Lithium	26.6	ug/L	10.0	2.4	1	08/06/13 12:25	08/07/13 16:55	7439-93-2	
Magnesium	19500	ug/L	50.0	6.5	1	08/06/13 12:25	08/08/13 10:50	7439-95-4	
Potassium	3390	ug/L	500	44.4	1	08/06/13 12:25	08/07/13 16:55	7440-09-7	
Silicon	8300	ug/L	500	23.9	1	08/06/13 12:25	08/07/13 16:55	7440-21-3	
Sodium	18400	ug/L	500	21.7	1	08/06/13 12:25	08/08/13 10:50	7440-23-5	
Zinc	3890	ug/L	50.0	3.3	1	08/06/13 12:25	08/07/13 16:55	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	71.1J	ug/L	75.0	16.6	1	08/06/13 12:25	08/07/13 17:16	7429-90-5	
Calcium, Dissolved	239000	ug/L	100	10.4	1	08/06/13 12:25	08/07/13 17:16	7440-70-2	
Iron, Dissolved	139	ug/L	50.0	11.6	1	08/06/13 12:25	08/08/13 11:12	7439-89-6	
Lithium, Dissolved	25.8	ug/L	10.0	2.4	1	08/06/13 12:25	08/07/13 17:16	7439-93-2	
Magnesium, Dissolved	19700	ug/L	50.0	6.5	1	08/06/13 12:25	08/08/13 11:12	7439-95-4	D9
Potassium, Dissolved	3360	ug/L	500	44.4	1	08/06/13 12:25	08/07/13 17:16	7440-09-7	
Silicon, Dissolved	7480	ug/L	500	23.9	1	08/06/13 12:25	08/07/13 17:16	7440-21-3	
Sodium, Dissolved	18400	ug/L	500	21.7	1	08/06/13 12:25	08/08/13 11:12	7440-23-5	
Zinc, Dissolved	3440	ug/L	50.0	3.3	1	08/06/13 12:25	08/07/13 17:16	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.4	ug/L	1.0	0.050	1	08/06/13 12:25	08/09/13 15:13	7440-38-2	
Cadmium	21.0	ug/L	0.50	0.050	1	08/06/13 12:25	08/09/13 15:13	7440-43-9	
Chromium	0.70J	ug/L	1.0	0.070	1	08/06/13 12:25	08/09/13 15:13	7440-47-3	B
Cobalt	2.7	ug/L	1.0	0.080	1	08/06/13 12:25	08/09/13 15:13	7440-48-4	
Copper	187	ug/L	1.0	0.12	1	08/06/13 12:25	08/09/13 15:13	7440-50-8	
Lead	14.2	ug/L	1.0	0.030	1	08/06/13 12:25	08/09/13 15:13	7439-92-1	
Manganese	1880	ug/L	1.0	0.14	1	08/06/13 12:25	08/09/13 15:13	7439-96-5	M1
Nickel	4.2	ug/L	1.0	0.070	1	08/06/13 12:25	08/09/13 15:13	7440-02-0	
Selenium	0.18J	ug/L	1.0	0.14	1	08/06/13 12:25	08/09/13 15:13	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.16J	ug/L	1.0	0.050	1	08/06/13 12:25	08/09/13 16:16	7440-38-2	
Cadmium, Dissolved	19.1	ug/L	0.50	0.050	1	08/06/13 12:25	08/09/13 16:16	7440-43-9	
Chromium, Dissolved	0.19J	ug/L	1.0	0.070	1	08/06/13 12:25	08/09/13 16:16	7440-47-3	B
Cobalt, Dissolved	2.8	ug/L	1.0	0.080	1	08/06/13 12:25	08/09/13 16:16	7440-48-4	D9
Copper, Dissolved	9.3	ug/L	1.0	0.12	1	08/06/13 12:25	08/09/13 16:16	7440-50-8	
Lead, Dissolved	0.038J	ug/L	1.0	0.030	1	08/06/13 12:25	08/09/13 16:16	7439-92-1	
Manganese, Dissolved	1870	ug/L	1.0	0.14	1	08/06/13 12:25	08/09/13 16:16	7439-96-5	M1
Nickel, Dissolved	4.1	ug/L	1.0	0.070	1	08/06/13 12:25	08/09/13 16:16	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	08/06/13 12:25	08/09/13 16:16	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	08/05/13 11:00	08/06/13 10:36	7439-97-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60150186

Sample: DR3A1308011200		Lab ID: 60150186002		Collected: 08/01/13 12:00		Received: 08/02/13 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	08/05/13 11:00	08/06/13 10:23	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	124	mg/L	20.0	4.9	1		08/05/13 11:06		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	4.9	1		08/05/13 11:06		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	4.9	1		08/05/13 11:06		
Alkalinity, Total as CaCO ₃	124	mg/L	20.0	4.9	1		08/05/13 11:06		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.090	1		08/08/13 19:04	24959-67-9	
Chloride	0.88J	mg/L	1.0	0.50	1		08/08/13 19:04	16887-00-6	
Fluoride	2.4	mg/L	0.20	0.047	1		08/08/13 19:04	16984-48-8	
Sulfate	613	mg/L	50.0	8.0	50		08/08/13 19:19	14808-79-8	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60150186

QC Batch: MERP/7569

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury

Associated Lab Samples: 60150186001, 60150186002

METHOD BLANK: 1231064

Matrix: Water

Associated Lab Samples: 60150186001, 60150186002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	08/06/13 10:25	

LABORATORY CONTROL SAMPLE: 1231065

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.8	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1231066 1231067

Parameter	Units	60150186001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	5.6	5.4	111	108	70-130	2	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60150186

QC Batch: MERP/7568

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury - Dissolved

Associated Lab Samples: 60150186001, 60150186002

METHOD BLANK: 1231060

Matrix: Water

Associated Lab Samples: 60150186001, 60150186002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	08/06/13 10:07	

LABORATORY CONTROL SAMPLE: 1231061

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	5.1	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1231062

1231063

Parameter	Units	60150186001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury, Dissolved	ug/L	ND	5	5	4.8	4.8	97	96	70-130	0	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60150186

QC Batch: MPRP/23731

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60150186001, 60150186002

METHOD BLANK: 1231539

Matrix: Water

Associated Lab Samples: 60150186001, 60150186002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	08/07/13 16:27	
Calcium	ug/L	ND	100	08/07/13 16:27	
Iron	ug/L	ND	50.0	08/08/13 10:26	
Lithium	ug/L	ND	10.0	08/07/13 16:27	
Magnesium	ug/L	6.7J	50.0	08/08/13 10:26	
Potassium	ug/L	ND	500	08/07/13 16:27	
Silicon	ug/L	ND	500	08/07/13 16:27	
Sodium	ug/L	ND	500	08/08/13 10:26	
Zinc	ug/L	ND	50.0	08/07/13 16:27	

LABORATORY CONTROL SAMPLE: 1231540

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	10200	102	85-115	
Calcium	ug/L	10000	10300	103	85-115	
Iron	ug/L	10000	10300	103	85-115	
Lithium	ug/L	1000	1020	102	85-115	
Magnesium	ug/L	10000	9930	99	85-115	
Potassium	ug/L	10000	10100	101	85-115	
Silicon	ug/L	5000	5100	102	85-115	
Sodium	ug/L	10000	10400	104	85-115	
Zinc	ug/L	1000	1030	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1231541

1231542

Parameter	Units	60150186001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	778	10000	10000	10600	11200	99	104	70-130	5	8	
Calcium	ug/L	240000	10000	10000	248000	261000	80	219	70-130	5	9	M1
Iron	ug/L	8080	10000	10000	17800	18100	97	100	70-130	2	10	
Lithium	ug/L	24.7	1000	1000	1040	1100	102	107	70-130	5	20	
Magnesium	ug/L	19300	10000	10000	29200	29500	99	102	70-130	1	9	
Potassium	ug/L	3360	10000	10000	13400	14000	100	107	70-130	5	7	
Silicon	ug/L	8210	5000	5000	13100	13800	98	112	70-130	5	5	
Sodium	ug/L	18600	10000	10000	28400	28800	98	102	70-130	1	8	
Zinc	ug/L	3880	1000	1000	4770	4830	89	95	70-130	1	11	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60150186

QC Batch: MPRP/23732

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60150186001, 60150186002

METHOD BLANK: 1231544

Matrix: Water

Associated Lab Samples: 60150186001, 60150186002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	08/07/13 16:30	
Calcium, Dissolved	ug/L	ND	100	08/07/13 16:30	
Iron, Dissolved	ug/L	ND	50.0	08/08/13 10:29	
Lithium, Dissolved	ug/L	ND	10.0	08/07/13 16:30	
Magnesium, Dissolved	ug/L	ND	50.0	08/08/13 10:29	
Potassium, Dissolved	ug/L	ND	500	08/07/13 16:30	
Silicon, Dissolved	ug/L	ND	500	08/07/13 16:30	
Sodium, Dissolved	ug/L	ND	500	08/08/13 10:29	
Zinc, Dissolved	ug/L	ND	50.0	08/07/13 16:30	

LABORATORY CONTROL SAMPLE: 1231545

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	10100	101	85-115	
Calcium, Dissolved	ug/L	10000	10200	102	85-115	
Iron, Dissolved	ug/L	10000	10200	102	85-115	
Lithium, Dissolved	ug/L	1000	1010	101	85-115	
Magnesium, Dissolved	ug/L	10000	9810	98	85-115	
Potassium, Dissolved	ug/L	10000	10000	100	85-115	
Silicon, Dissolved	ug/L	5000	5050	101	85-115	
Sodium, Dissolved	ug/L	10000	10300	103	85-115	
Zinc, Dissolved	ug/L	1000	1010	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1231546

1231547

Parameter	Units	60150186001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	74.1J	10000	10000	9880	10200	98	101	70-130	3	8	
Calcium, Dissolved	ug/L	238000	10000	10000	242000	253000	40	153	70-130	5	9	M1
Iron, Dissolved	ug/L	ND	10000	10000	10000	10300	100	103	70-130	2	10	
Lithium, Dissolved	ug/L	24.8	1000	1000	1040	1060	101	104	70-130	2	20	
Magnesium, Dissolved	ug/L	19200	10000	10000	29000	29800	98	106	70-130	3	9	
Potassium, Dissolved	ug/L	3360	10000	10000	13400	13800	100	104	70-130	3	7	
Silicon, Dissolved	ug/L	7400	5000	5000	12100	12600	94	105	70-130	4	5	
Sodium, Dissolved	ug/L	18100	10000	10000	28300	29300	102	112	70-130	3	8	
Zinc, Dissolved	ug/L	3350	1000	1000	4240	4390	88	104	70-130	4	11	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60150186

QC Batch: MPRP/23729 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60150186001, 60150186002

METHOD BLANK: 1231529 Matrix: Water

Associated Lab Samples: 60150186001, 60150186002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	08/09/13 15:00	
Cadmium	ug/L	ND	0.50	08/09/13 15:00	
Chromium	ug/L	0.091J	1.0	08/09/13 15:00	
Cobalt	ug/L	0.093J	1.0	08/09/13 15:00	
Copper	ug/L	ND	1.0	08/09/13 15:00	
Lead	ug/L	ND	1.0	08/09/13 15:00	
Manganese	ug/L	ND	1.0	08/09/13 15:00	
Nickel	ug/L	ND	1.0	08/09/13 15:00	
Selenium	ug/L	ND	1.0	08/09/13 15:00	

LABORATORY CONTROL SAMPLE: 1231530

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	41.7	104	85-115	
Cadmium	ug/L	40	41.1	103	85-115	
Chromium	ug/L	40	41.8	104	85-115	
Cobalt	ug/L	40	41.6	104	85-115	
Copper	ug/L	40	42.0	105	85-115	
Lead	ug/L	40	40.5	101	85-115	
Manganese	ug/L	40	41.5	104	85-115	
Nickel	ug/L	40	42.0	105	85-115	
Selenium	ug/L	40	42.3	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1231531 1231532

Parameter	Units	60150186002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	1.4	40	40	43.2	43.9	105	106	70-130	1	20	
Cadmium	ug/L	21.0	40	40	60.5	61.3	99	101	70-130	1	20	
Chromium	ug/L	0.70J	40	40	41.2	41.5	101	102	70-130	1	20	
Cobalt	ug/L	2.7	40	40	42.4	42.6	99	100	70-130	1	20	
Copper	ug/L	187	40	40	222	225	88	95	70-130	1	20	
Lead	ug/L	14.2	40	40	55.3	55.8	103	104	70-130	1	20	
Manganese	ug/L	1880	40	40	1900	1920	40	108	70-130	1	20 M1	
Nickel	ug/L	4.2	40	40	42.8	43.4	96	98	70-130	1	20	
Selenium	ug/L	0.18J	40	40	40.9	41.2	102	102	70-130	1	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60150186

QC Batch: MPRP/23730

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60150186001, 60150186002

METHOD BLANK: 1231533

Matrix: Water

Associated Lab Samples: 60150186001, 60150186002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	08/09/13 16:03	
Cadmium, Dissolved	ug/L	ND	0.50	08/09/13 16:03	
Chromium, Dissolved	ug/L	0.095J	1.0	08/09/13 16:03	
Cobalt, Dissolved	ug/L	0.10J	1.0	08/09/13 16:03	
Copper, Dissolved	ug/L	ND	1.0	08/09/13 16:03	
Lead, Dissolved	ug/L	ND	1.0	08/09/13 16:03	
Manganese, Dissolved	ug/L	ND	1.0	08/09/13 16:03	
Nickel, Dissolved	ug/L	ND	1.0	08/09/13 16:03	
Selenium, Dissolved	ug/L	ND	1.0	08/09/13 16:03	

LABORATORY CONTROL SAMPLE: 1231534

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	41.5	104	85-115	
Cadmium, Dissolved	ug/L	40	41.6	104	85-115	
Chromium, Dissolved	ug/L	40	41.4	103	85-115	
Cobalt, Dissolved	ug/L	40	40.8	102	85-115	
Copper, Dissolved	ug/L	40	41.3	103	85-115	
Lead, Dissolved	ug/L	40	40.1	100	85-115	
Manganese, Dissolved	ug/L	40	41.0	103	85-115	
Nickel, Dissolved	ug/L	40	41.2	103	85-115	
Selenium, Dissolved	ug/L	40	41.2	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1231535

1231536

Parameter	Units	60150186002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	0.16J	40	40	41.9	42.2	104	105	70-130	1	20	
Cadmium, Dissolved	ug/L	19.1	40	40	59.4	60.3	101	103	70-130	2	20	
Chromium, Dissolved	ug/L	0.19J	40	40	39.8	40.6	99	101	70-130	2	20	
Cobalt, Dissolved	ug/L	2.8	40	40	41.5	41.6	97	97	70-130	0	20	
Copper, Dissolved	ug/L	9.3	40	40	45.7	45.7	91	91	70-130	0	20	
Lead, Dissolved	ug/L	0.038J	40	40	41.4	42.0	103	105	70-130	1	20	
Manganese, Dissolved	ug/L	1870	40	40	1890	1950	48	202	70-130	3	20 M1	
Nickel, Dissolved	ug/L	4.1	40	40	41.7	41.8	94	94	70-130	0	20	
Selenium, Dissolved	ug/L	ND	40	40	42.0	43.4	105	108	70-130	3	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60150186

QC Batch: WET/42709

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60150186001, 60150186002

METHOD BLANK: 1230918

Matrix: Water

Associated Lab Samples: 60150186001, 60150186002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	08/05/13 09:49	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	08/05/13 09:49	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	08/05/13 09:49	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	08/05/13 09:49	

LABORATORY CONTROL SAMPLE: 1230919

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	488	98	90-110	

SAMPLE DUPLICATE: 1230922

Parameter	Units	60149890002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	113	116	3	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	113	116	3	10	

SAMPLE DUPLICATE: 1230923

Parameter	Units	60149827002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	270	264	2	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	270	264	2	10	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60150186

QC Batch: WETA/25707

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60150186001, 60150186002

METHOD BLANK: 1232081

Matrix: Water

Associated Lab Samples: 60150186001, 60150186002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	08/08/13 09:02	
Chloride	mg/L	ND	1.0	08/08/13 09:02	
Fluoride	mg/L	ND	0.20	08/08/13 09:02	
Sulfate	mg/L	ND	1.0	08/08/13 09:02	

LABORATORY CONTROL SAMPLE: 1232082

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.8	96	90-110	
Chloride	mg/L	5	4.7	94	90-110	
Fluoride	mg/L	2.5	2.3	94	90-110	
Sulfate	mg/L	5	5.0	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1232083

1232084

Parameter	Units	60149642001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Bromide	mg/L	3.5	10	10	13.0	13.1	95	95	75-119	0	10
Chloride	mg/L	178	50	50	234	230	112	104	64-118	2	12
Fluoride	mg/L	1.5	5	5	6.7	6.7	104	103	75-110	1	10
Sulfate	mg/L	20.7	10	10	34.0	34.0	133	133	61-119	0	10 M1

MATRIX SPIKE SAMPLE: 1232085

Parameter	Units	60149827003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	5	4.8	96	75-119	
Chloride	mg/L	109	50	153	89	64-118	
Fluoride	mg/L	0.71	2.5	3.5	110	75-110	
Sulfate	mg/L	0.48J	5	6.7	125	61-119 M1	

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Rico-Argentine Mine Site

Pace Project No.: 60150186

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rico-Argentine Mine Site

Pace Project No.: 60150186

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60150186001	DR3A1307300400	EPA 200.7	MPRP/23731	EPA 200.7	ICP/18612
60150186002	DR3A1308011200	EPA 200.7	MPRP/23731	EPA 200.7	ICP/18612
60150186001	DR3A1307300400	EPA 200.7	MPRP/23732	EPA 200.7	ICP/18611
60150186002	DR3A1308011200	EPA 200.7	MPRP/23732	EPA 200.7	ICP/18611
60150186001	DR3A1307300400	EPA 200.8	MPRP/23729	EPA 200.8	ICPM/2427
60150186002	DR3A1308011200	EPA 200.8	MPRP/23729	EPA 200.8	ICPM/2427
60150186001	DR3A1307300400	EPA 200.8	MPRP/23730	EPA 200.8	ICPM/2426
60150186002	DR3A1308011200	EPA 200.8	MPRP/23730	EPA 200.8	ICPM/2426
60150186001	DR3A1307300400	EPA 245.1	MERP/7569	EPA 245.1	MERC/7527
60150186002	DR3A1308011200	EPA 245.1	MERP/7569	EPA 245.1	MERC/7527
60150186001	DR3A1307300400	EPA 245.1	MERP/7568	EPA 245.1	MERC/7526
60150186002	DR3A1308011200	EPA 245.1	MERP/7568	EPA 245.1	MERC/7526
60150186001	DR3A1307300400	SM 2320B	WET/42709		
60150186002	DR3A1308011200	SM 2320B	WET/42709		
60150186001	DR3A1307300400	EPA 300.0	WETA/25707		
60150186002	DR3A1308011200	EPA 300.0	WETA/25707		

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Sample Condition Upon Receipt
ESI Tech Spec Client

WO#: 60150186



60150186

Client Name: BPAMEC

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 1233W878447180916 Pace Shipping Label Used? Yes ☐ No ☒

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other PEPIC

Thermometer Used: T-112 / T-194

Type of Ice: Wet Blue ☐ None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 1.5

Date and initials of person examining contents: 8/2/13

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Filtered volume received for dissolved tests?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Includes date/time/ID/analyses	Matrix: <u>WT</u>	15.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	16.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	17.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		18.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	19.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	20. List State:

Client Notification/ Resolution:

Copy COC to Client? Y / N

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [Signature]

Date: 8/2/13

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: <u>1158</u>	Start:
End: <u>1203</u>	End:
Temp: <u>8/2/13</u>	Temp:



Laboratory Management Program LAMP Chain of Custody Record

Page 1 of 1BP/ARC Project Name: Rico-Argentine Mine SiteReq Due Date (mm/dd/yy): _____ Rush TAT: Yes X No _____

BP/ARC Facility No: _____

Lab Work Order Number: _____

Lab Name: Pace Analytical Laboratories, Inc.				BP/ARC Facility Address: Rico-Argentine Mine				Consultant/Contractor: AMEC E&I, Inc.													
Lab Address: 9608 Loiret Blvd., Lenexa, KS 66219				City, State, ZIP Code: Rico, Colorado				Consultant/Contractor Project No: SA11161313.300H													
Lab PM: Heather Wilson				Lead Regulatory Agency: U.S. EPA Region 8				Address: 10670 White Rock Road, Suite 100, Rancho Cordova, CA													
Lab Phone: (913) 563-1407				California Global ID No.: NA				Consultant/Contractor PM: Marc Lombardi													
Lab Shipping Acct: UPS # 733W87				Enfos Proposal No: D009D-0057 WR 268175				Phone: 916-636-3200													
Lab Bottle Order No: NA				Accounting Mode: Provision <u>X</u> OOC-BU _____ OOC-RM _____				Email Report/EDD To: lynda.lombardi@amec.com													
Other Info: 2013 517 Injection Treatability Study				Stage: 4-Execute Activity: Spend				Invoice To: BP/ARC <u>X</u> Contractor _____													
BP/ARC EBM: Anthony Brown				Matrix		No. Containers / Preservative		Requested Analyses						Report Type & QC Level							
EBM Phone: 714-228-6770														Standard <u>X</u>							
EBM Email: anthony.brown@bp.com														Full Data Package _____							
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Methanol	Tot Metals-see notes (E200.7/200.8/E245.1)	Dis Metals-see notes (E200.7/200.8/E245.1)	Alkalinity-Total.HCO ₃ , CO ₃ , OH (SM2320B)	Bromide (E300.0)	Chloride (E300.0)	Fluoride (E300.0)	Sulfate (E300.0)	Comments	
	DR3A1307300400	7/30/13	400	X			3	1		2	1307		X	X	X	X	X	X	X	X	Dissolved metals samples are field filtered. 001
	DR3A1308011200	8/1/13	1200	X			3	1		2	1308		X	X	X	X	X	X	X	X	002
<div>Metals are: Al, Ca, Fe, K, Li, Na, Mg, Si, Zn (E200.7); As, Cd, Co, Cr, Cu, Mn, Ni, Pb, Se (E200.8); and Hg (E245.1)</div>																					
RUSH 5-day TAT																					
Sampler's Name: <u>Merete Copener</u>				Relinquished By / Affiliation: <u>Merete Copener / AECI</u>				Date: <u>8/1/13</u>	Time: <u>13:20</u>	Accepted By / Affiliation: <u>PAI</u>				Date: <u>8/2/13</u>	Time: <u>1000</u>						
Sampler's Company: <u>AECI</u>																					
Shipment Method: <u>UPS</u> Ship Date: <u>8/1/13</u>																					
Shipment Tracking No: <u>1Z 733 W87844 718 0996</u>																					
Special Instructions:																					
THIS LINE - LAB USE ONLY: Custody Seals In Place: <u>(Yes)</u> No Temp Blank: <u>(Yes)</u> No Cooler Temp on Receipt: <u>15</u> °F/C Trip Blank: Yes / <u>No</u> MS/MSD Sample Submitted: Yes / <u>No</u>																					

August 13, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: Rico-Argentine Mine Site
Pace Project No.: 60150362

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on August 06, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Rico-Argentine Mine Site

Pace Project No.: 60150362

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

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SAMPLE SUMMARY

Project: Rico-Argentine Mine Site

Pace Project No.: 60150362

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60150362001	DR3A1308051100	Water	08/05/13 11:00	08/06/13 09:50

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SAMPLE ANALYTE COUNT

Project: Rico-Argentine Mine Site

Pace Project No.: 60150362

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60150362001	DR3A1308051100	EPA 200.7	TDS	9
		EPA 200.7	TDS	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	NDJ	1
		EPA 245.1	NDJ	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60150362

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: August 13, 2013

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23766

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60150362001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1232827)
 - Calcium
- MSD (Lab ID: 1232828)
 - Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60150362

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: August 13, 2013

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23765

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60150362001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1232824)
- Calcium, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60150362

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: August 13, 2013

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23768

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60150362001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1232835)
- Manganese

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60150362

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: August 13, 2013

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23767

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60150362001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1232831)
 - Manganese, Dissolved
- MSD (Lab ID: 1232832)
 - Manganese, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60150362

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: August 13, 2013

General Information:

1 sample was analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MERP/7577

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60150362001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1231939)
- Mercury

R1: RPD value was outside control limits.

- MSD (Lab ID: 1231939)
- Mercury

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60150362

Method: EPA 245.1
Description: 245.1 Mercury, Dissolved
Client: BP AMEC
Date: August 13, 2013

General Information:

1 sample was analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60150362

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: August 13, 2013

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60150362

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: August 13, 2013

General Information:

1 sample was analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60150362

Sample: DR3A1308051100 Lab ID: 60150362001 Collected: 08/05/13 11:00 Received: 08/06/13 09:50 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	940	ug/L	75.0	16.6	1	08/08/13 10:40	08/09/13 14:47	7429-90-5	M1
Calcium	257000	ug/L	100	10.4	1	08/08/13 10:40	08/09/13 14:47	7440-70-2	
Iron	8640	ug/L	50.0	11.6	1	08/08/13 10:40	08/09/13 14:47	7439-89-6	
Lithium	26.7	ug/L	10.0	2.4	1	08/08/13 10:40	08/09/13 14:47	7439-93-2	
Magnesium	21000	ug/L	50.0	6.5	1	08/08/13 10:40	08/09/13 14:47	7439-95-4	
Potassium	3600	ug/L	500	44.4	1	08/08/13 10:40	08/09/13 14:47	7440-09-7	
Silicon	8460	ug/L	500	23.9	1	08/08/13 10:40	08/09/13 14:47	7440-21-3	
Sodium	17600	ug/L	500	21.7	1	08/08/13 10:40	08/09/13 14:47	7440-23-5	
Zinc	4270	ug/L	50.0	3.3	1	08/08/13 10:40	08/09/13 14:47	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	85.0	ug/L	75.0	16.6	1	08/08/13 10:40	08/09/13 15:00	7429-90-5	M1
Calcium, Dissolved	251000	ug/L	100	10.4	1	08/08/13 10:40	08/09/13 15:00	7440-70-2	
Iron, Dissolved	1090	ug/L	50.0	11.6	1	08/08/13 10:40	08/09/13 15:00	7439-89-6	
Lithium, Dissolved	24.5	ug/L	10.0	2.4	1	08/08/13 10:40	08/09/13 15:00	7439-93-2	
Magnesium, Dissolved	20900	ug/L	50.0	6.5	1	08/08/13 10:40	08/09/13 15:00	7439-95-4	
Potassium, Dissolved	3500	ug/L	500	44.4	1	08/08/13 10:40	08/09/13 15:00	7440-09-7	
Silicon, Dissolved	7560	ug/L	500	23.9	1	08/08/13 10:40	08/09/13 15:00	7440-21-3	
Sodium, Dissolved	17200	ug/L	500	21.7	1	08/08/13 10:40	08/09/13 15:00	7440-23-5	
Zinc, Dissolved	3800	ug/L	50.0	3.3	1	08/08/13 10:40	08/09/13 15:00	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.2	ug/L	1.0	0.050	1	08/08/13 10:40	08/11/13 04:21	7440-38-2	M1
Cadmium	21.8	ug/L	0.50	0.050	1	08/08/13 10:40	08/11/13 04:21	7440-43-9	
Chromium	0.72J	ug/L	1.0	0.070	1	08/08/13 10:40	08/11/13 04:21	7440-47-3	
Cobalt	2.6	ug/L	1.0	0.080	1	08/08/13 10:40	08/11/13 04:21	7440-48-4	
Copper	198	ug/L	1.0	0.12	1	08/08/13 10:40	08/11/13 04:21	7440-50-8	
Lead	16.1	ug/L	1.0	0.030	1	08/08/13 10:40	08/11/13 04:21	7439-92-1	
Manganese	1870	ug/L	1.0	0.14	1	08/08/13 10:40	08/11/13 04:21	7439-96-5	
Nickel	4.2	ug/L	1.0	0.070	1	08/08/13 10:40	08/11/13 04:21	7440-02-0	
Selenium	ND	ug/L	1.0	0.14	1	08/08/13 10:40	08/11/13 04:21	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	1.0	0.050	1	08/08/13 10:40	08/11/13 03:56	7440-38-2	D9
Cadmium, Dissolved	19.9	ug/L	0.50	0.050	1	08/08/13 10:40	08/11/13 03:56	7440-43-9	
Chromium, Dissolved	ND	ug/L	1.0	0.070	1	08/08/13 10:40	08/11/13 03:56	7440-47-3	
Cobalt, Dissolved	2.8	ug/L	1.0	0.080	1	08/08/13 10:40	08/11/13 03:56	7440-48-4	
Copper, Dissolved	16.0	ug/L	1.0	0.12	1	08/08/13 10:40	08/11/13 03:56	7440-50-8	
Lead, Dissolved	ND	ug/L	1.0	0.030	1	08/08/13 10:40	08/11/13 03:56	7439-92-1	
Manganese, Dissolved	1840	ug/L	1.0	0.14	1	08/08/13 10:40	08/11/13 03:56	7439-96-5	
Nickel, Dissolved	4.0	ug/L	1.0	0.070	1	08/08/13 10:40	08/11/13 03:56	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	08/08/13 10:40	08/11/13 03:56	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	08/07/13 08:30	08/07/13 11:59	7439-97-6	M1,R1

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60150362

Sample: DR3A1308051100		Lab ID: 60150362001		Collected: 08/05/13 11:00		Received: 08/06/13 09:50		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	08/07/13 08:30	08/07/13 11:28	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	126	mg/L	20.0	4.9	1		08/13/13 08:15		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	4.9	1		08/13/13 08:15		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	4.9	1		08/13/13 08:15		
Alkalinity, Total as CaCO ₃	126	mg/L	20.0	4.9	1		08/13/13 08:15		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.090	1		08/09/13 20:44	24959-67-9	
Chloride	0.91J	mg/L	1.0	0.50	1		08/09/13 20:44	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.047	1		08/09/13 20:44	16984-48-8	
Sulfate	872	mg/L	50.0	8.0	50		08/09/13 20:58	14808-79-8	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60150362

QC Batch: MERP/7577

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury

Associated Lab Samples: 60150362001

METHOD BLANK: 1231936

Matrix: Water

Associated Lab Samples: 60150362001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	08/07/13 11:46	

LABORATORY CONTROL SAMPLE: 1231937

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.4	88	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1231938

1231939

Parameter	Units	60150362001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.0	3.0	81	60	70-130	29	20	M1, R1

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60150362

QC Batch: MERP/7576

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury - Dissolved

Associated Lab Samples: 60150362001

METHOD BLANK: 1231932

Matrix: Water

Associated Lab Samples: 60150362001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	08/07/13 11:17	

LABORATORY CONTROL SAMPLE: 1231933

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	5.2	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1231934 1231935

Parameter	Units	60150362001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury, Dissolved	ug/L	ND	5	5	3.8	4.0	77	80	70-130	4	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60150362

QC Batch: MPRP/23766 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60150362001

METHOD BLANK: 1232825 Matrix: Water
Associated Lab Samples: 60150362001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	08/09/13 14:43	
Calcium	ug/L	ND	100	08/09/13 14:43	
Iron	ug/L	ND	50.0	08/09/13 14:43	
Lithium	ug/L	ND	10.0	08/09/13 14:43	
Magnesium	ug/L	ND	50.0	08/09/13 14:43	
Potassium	ug/L	ND	500	08/09/13 14:43	
Silicon	ug/L	ND	500	08/09/13 14:43	
Sodium	ug/L	ND	500	08/09/13 14:43	
Zinc	ug/L	ND	50.0	08/09/13 14:43	

LABORATORY CONTROL SAMPLE: 1232826

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	10100	101	85-115	
Calcium	ug/L	10000	9930	99	85-115	
Iron	ug/L	10000	9800	98	85-115	
Lithium	ug/L	1000	1070	107	85-115	
Magnesium	ug/L	10000	10300	103	85-115	
Potassium	ug/L	10000	10700	107	85-115	
Silicon	ug/L	5000	4790	96	85-115	
Sodium	ug/L	10000	10500	105	85-115	
Zinc	ug/L	1000	1020	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1232827 1232828

Parameter	Units	60150362001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	940	10000	10000	11100	11000	102	101	70-130	0	8	
Calcium	ug/L	257000	10000	10000	258000	257000	19	1	70-130	1	9 M1	
Iron	ug/L	8640	10000	10000	18100	18100	95	95	70-130	0	10	
Lithium	ug/L	26.7	1000	1000	1070	1060	105	103	70-130	1	20	
Magnesium	ug/L	21000	10000	10000	30000	30100	90	91	70-130	0	9	
Potassium	ug/L	3600	10000	10000	14000	13900	104	103	70-130	1	7	
Silicon	ug/L	8460	5000	5000	13200	13100	94	92	70-130	1	5	
Sodium	ug/L	17600	10000	10000	27500	27000	99	94	70-130	2	8	
Zinc	ug/L	4270	1000	1000	5060	5040	79	77	70-130	0	11	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60150362

QC Batch: MPRP/23765 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Dissolved
Associated Lab Samples: 60150362001

METHOD BLANK: 1232821 Matrix: Water
Associated Lab Samples: 60150362001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	08/09/13 14:56	
Calcium, Dissolved	ug/L	13.0J	100	08/09/13 14:56	
Iron, Dissolved	ug/L	ND	50.0	08/09/13 14:56	
Lithium, Dissolved	ug/L	ND	10.0	08/09/13 14:56	
Magnesium, Dissolved	ug/L	ND	50.0	08/09/13 14:56	
Potassium, Dissolved	ug/L	ND	500	08/09/13 14:56	
Silicon, Dissolved	ug/L	ND	500	08/09/13 14:56	
Sodium, Dissolved	ug/L	ND	500	08/09/13 14:56	
Zinc, Dissolved	ug/L	ND	50.0	08/09/13 14:56	

LABORATORY CONTROL SAMPLE: 1232822

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	10000	100	85-115	
Calcium, Dissolved	ug/L	10000	9880	99	85-115	
Iron, Dissolved	ug/L	10000	9700	97	85-115	
Lithium, Dissolved	ug/L	1000	1050	105	85-115	
Magnesium, Dissolved	ug/L	10000	10200	102	85-115	
Potassium, Dissolved	ug/L	10000	10500	105	85-115	
Silicon, Dissolved	ug/L	5000	4740	95	85-115	
Sodium, Dissolved	ug/L	10000	10300	103	85-115	
Zinc, Dissolved	ug/L	1000	1020	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1232823 1232824

Parameter	Units	60150362001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	85.0	10000	10000	10300	10100	102	100	70-130	2	8	
Calcium, Dissolved	ug/L	251000	10000	10000	260000	254000	92	30	70-130	2	9 M1	
Iron, Dissolved	ug/L	1090	10000	10000	10900	10700	98	96	70-130	2	10	
Lithium, Dissolved	ug/L	24.5	1000	1000	1060	1040	104	102	70-130	2	20	
Magnesium, Dissolved	ug/L	20900	10000	10000	30500	29800	96	89	70-130	2	9	
Potassium, Dissolved	ug/L	3500	10000	10000	13900	13700	104	102	70-130	2	7	
Silicon, Dissolved	ug/L	7560	5000	5000	12500	12200	99	94	70-130	2	5	
Sodium, Dissolved	ug/L	17200	10000	10000	27300	26800	101	96	70-130	2	8	
Zinc, Dissolved	ug/L	3800	1000	1000	4710	4580	90	78	70-130	3	11	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60150362

QC Batch: MPRP/23768 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60150362001

METHOD BLANK: 1232833 Matrix: Water
Associated Lab Samples: 60150362001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	08/11/13 04:17	
Cadmium	ug/L	ND	0.50	08/11/13 04:17	
Chromium	ug/L	ND	1.0	08/11/13 04:17	
Cobalt	ug/L	ND	1.0	08/11/13 04:17	
Copper	ug/L	ND	1.0	08/11/13 04:17	
Lead	ug/L	ND	1.0	08/11/13 04:17	
Manganese	ug/L	ND	1.0	08/11/13 04:17	
Nickel	ug/L	ND	1.0	08/11/13 04:17	
Selenium	ug/L	ND	1.0	08/11/13 04:17	

LABORATORY CONTROL SAMPLE: 1232834

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	39.9	100	85-115	
Cadmium	ug/L	40	41.3	103	85-115	
Chromium	ug/L	40	40.2	100	85-115	
Cobalt	ug/L	40	39.4	99	85-115	
Copper	ug/L	40	40.4	101	85-115	
Lead	ug/L	40	40.4	101	85-115	
Manganese	ug/L	40	40.4	101	85-115	
Nickel	ug/L	40	39.7	99	85-115	
Selenium	ug/L	40	40.4	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1232835 1232836

Parameter	Units	60150362001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	1.2	40	40	41.8	41.4	101	100	70-130	1	20	
Cadmium	ug/L	21.8	40	40	61.2	61.5	99	99	70-130	1	20	
Chromium	ug/L	0.72J	40	40	40.5	39.9	99	98	70-130	1	20	
Cobalt	ug/L	2.6	40	40	41.1	40.5	96	95	70-130	1	20	
Copper	ug/L	198	40	40	231	236	82	95	70-130	2	20	
Lead	ug/L	16.1	40	40	56.9	57.3	102	103	70-130	1	20	
Manganese	ug/L	1870	40	40	1880	1910	8	92	70-130	2	20 M1	
Nickel	ug/L	4.2	40	40	40.8	40.4	92	91	70-130	1	20	
Selenium	ug/L	ND	40	40	39.8	38.8	99	97	70-130	2	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60150362

QC Batch: MPRP/23767 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60150362001

METHOD BLANK: 1232829 Matrix: Water
Associated Lab Samples: 60150362001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	08/11/13 03:48	
Cadmium, Dissolved	ug/L	ND	0.50	08/11/13 03:48	
Chromium, Dissolved	ug/L	ND	1.0	08/11/13 03:48	
Cobalt, Dissolved	ug/L	ND	1.0	08/11/13 03:48	
Copper, Dissolved	ug/L	0.21J	1.0	08/11/13 03:48	
Lead, Dissolved	ug/L	ND	1.0	08/11/13 03:48	
Manganese, Dissolved	ug/L	ND	1.0	08/11/13 03:48	
Nickel, Dissolved	ug/L	ND	1.0	08/11/13 03:48	
Selenium, Dissolved	ug/L	ND	1.0	08/11/13 03:48	

LABORATORY CONTROL SAMPLE: 1232830

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	40.3	101	85-115	
Cadmium, Dissolved	ug/L	40	41.2	103	85-115	
Chromium, Dissolved	ug/L	40	40.9	102	85-115	
Cobalt, Dissolved	ug/L	40	40.0	100	85-115	
Copper, Dissolved	ug/L	40	41.0	103	85-115	
Lead, Dissolved	ug/L	40	40.2	100	85-115	
Manganese, Dissolved	ug/L	40	41.9	105	85-115	
Nickel, Dissolved	ug/L	40	39.9	100	85-115	
Selenium, Dissolved	ug/L	40	39.8	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1232831 1232832

Parameter	Units	60150362001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	ND	40	40	41.2	41.5	103	104	70-130	1	20	
Cadmium, Dissolved	ug/L	19.9	40	40	58.9	60.4	97	101	70-130	3	20	
Chromium, Dissolved	ug/L	ND	40	40	39.2	40.0	98	100	70-130	2	20	
Cobalt, Dissolved	ug/L	2.8	40	40	40.8	41.6	95	97	70-130	2	20	
Copper, Dissolved	ug/L	16.0	40	40	52.7	53.8	92	94	70-130	2	20	
Lead, Dissolved	ug/L	ND	40	40	40.5	41.5	101	104	70-130	2	20	
Manganese, Dissolved	ug/L	1840	40	40	1850	1910	28	182	70-130	3	20 M1	
Nickel, Dissolved	ug/L	4.0	40	40	41.7	42.0	94	95	70-130	1	20	
Selenium, Dissolved	ug/L	ND	40	40	40.2	39.7	100	99	70-130	1	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60150362

QC Batch: WET/42825 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60150362001

METHOD BLANK: 1234866 Matrix: Water
Associated Lab Samples: 60150362001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	08/13/13 08:11	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	08/13/13 08:11	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	08/13/13 08:11	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	08/13/13 08:11	

LABORATORY CONTROL SAMPLE: 1234867

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	493	99	90-110	

SAMPLE DUPLICATE: 1234870

Parameter	Units	60150350001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	406	418	3	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	406	418	3	10	

SAMPLE DUPLICATE: 1234872

Parameter	Units	60150420001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	459	463	1	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	459	463	1	10	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60150362

QC Batch: WETA/25746 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60150362001

METHOD BLANK: 1233737 Matrix: Water
Associated Lab Samples: 60150362001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	08/09/13 13:03	
Chloride	mg/L	ND	1.0	08/09/13 13:03	
Fluoride	mg/L	ND	0.20	08/09/13 13:03	
Sulfate	mg/L	ND	1.0	08/09/13 13:03	

LABORATORY CONTROL SAMPLE: 1233738

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.9	98	90-110	
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	2.5	2.4	97	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1233739 1233740

Parameter	Units	60149889001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	ND	10	10	9.6	9.8	96	98	75-119	1	10	
Chloride	mg/L	16.0	10	10	25.5	25.6	95	96	64-118	0	12	
Fluoride	mg/L	ND	5	5	4.6	4.8	93	96	75-110	4	10	
Sulfate	mg/L	19.6	10	10	29.4	29.5	98	99	61-119	0	10	

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Rico-Argentine Mine Site

Pace Project No.: 60150362

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

R1 RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rico-Argentine Mine Site

Pace Project No.: 60150362

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60150362001	DR3A1308051100	EPA 200.7	MPRP/23766	EPA 200.7	ICP/18630
60150362001	DR3A1308051100	EPA 200.7	MPRP/23765	EPA 200.7	ICP/18631
60150362001	DR3A1308051100	EPA 200.8	MPRP/23768	EPA 200.8	ICPM/2435
60150362001	DR3A1308051100	EPA 200.8	MPRP/23767	EPA 200.8	ICPM/2434
60150362001	DR3A1308051100	EPA 245.1	MERP/7577	EPA 245.1	MERC/7532
60150362001	DR3A1308051100	EPA 245.1	MERP/7576	EPA 245.1	MERC/7531
60150362001	DR3A1308051100	SM 2320B	WET/42825		
60150362001	DR3A1308051100	EPA 300.0	WETA/25746		

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Sample Condition Upon Receipt
ESI Tech Spec Client

WO#: 60150362



60150362

Client Name: BP. AMEC

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 1Z 733W8784 4902 4108 Pace Shipping Label Used? Yes ☐ No ☒

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☒ Bubble Bags ☐ Foam ☐ None ☐ Other ☐

Thermometer Used: T-112 / T-194

Type of Ice: Wet Blue ☐ None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 0.9

Date and initials of person examining contents: DBS 8/6/13 155

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Filtered volume received for dissolved tests?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Includes date/time/ID/analyses	Matrix: <u>water</u>	15.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed: <u>NA</u> Lot # of added preservative:
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	18.
Pace Trip Blank lot # (if purchased):	<u>NA</u>	19.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	20.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	21. List State:

Client Notification/ Resolution:

Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Amu Date: 8/16/13

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: <u>1150</u>	Start:
End: <u>1155</u>	End:
Temp:	Temp:



Chain of Custody Record

Page 1 of 1

Rush TAT: Yes ☒ No ☐

Lab Work Order Number:

[illegible]

August 19, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: 2013 517 INJECTION TREATABILIT
Pace Project No.: 60150754

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on August 09, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60150754

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60150754

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60150754001	DR3A1308080935	Water	08/08/13 09:35	08/09/13 09:45

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SAMPLE ANALYTE COUNT

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60150754

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60150754001	DR3A1308080935	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	TJT	1
		EPA 245.1	TJT	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60150754

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: August 19, 2013

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60150754

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: August 19, 2013

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23828

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60150754001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1235751)
 - Calcium, Dissolved
- MSD (Lab ID: 1235752)
 - Calcium, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60150754

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: August 19, 2013

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23829

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60150897001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1235755)
 - Manganese
- MSD (Lab ID: 1235756)
 - Manganese

Additional Comments:

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60150754

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: August 19, 2013

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23830

B: Analyte was detected in the associated method blank.

- BLANK for HBN 302633 [MPRP/238 (Lab ID: 1235757)]
- Lead, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23830

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60150897001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1235759)
 - Manganese, Dissolved
- MSD (Lab ID: 1235760)
 - Manganese, Dissolved

Additional Comments:

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60150754

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: August 19, 2013

General Information:

1 sample was analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60150754

Method: EPA 245.1

Description: 245.1 Mercury, Dissolved

Client: BP AMEC

Date: August 19, 2013

General Information:

1 sample was analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60150754

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: August 19, 2013

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60150754

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: August 19, 2013

General Information:

1 sample was analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: WETA/25807

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60150468002,60150754001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1236513)
- Sulfate

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60150754

Sample: DR3A1308080935 Lab ID: 60150754001 Collected: 08/08/13 09:35 Received: 08/09/13 09:45 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	910	ug/L	75.0	16.6	1	08/13/13 18:11	08/15/13 09:57	7429-90-5	
Calcium	243000	ug/L	100	10.4	1	08/13/13 18:11	08/15/13 09:57	7440-70-2	
Iron	8580	ug/L	50.0	11.6	1	08/13/13 18:11	08/15/13 09:57	7439-89-6	
Lithium	24.6	ug/L	10.0	2.4	1	08/13/13 18:11	08/15/13 09:57	7439-93-2	
Magnesium	19900	ug/L	50.0	6.5	1	08/13/13 18:11	08/15/13 09:57	7439-95-4	
Potassium	3480	ug/L	500	44.4	1	08/13/13 18:11	08/15/13 09:57	7440-09-7	
Silicon	8630	ug/L	500	23.9	1	08/13/13 18:11	08/15/13 09:57	7440-21-3	
Sodium	16400	ug/L	500	21.7	1	08/13/13 18:11	08/15/13 09:57	7440-23-5	
Zinc	4060	ug/L	50.0	3.3	1	08/13/13 18:11	08/15/13 09:57	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	89.2	ug/L	75.0	16.6	1	08/13/13 18:11	08/15/13 10:13	7429-90-5	
Calcium, Dissolved	250000	ug/L	100	10.4	1	08/13/13 18:11	08/15/13 10:13	7440-70-2	D9,M1
Iron, Dissolved	1090	ug/L	50.0	11.6	1	08/13/13 18:11	08/15/13 10:13	7439-89-6	
Lithium, Dissolved	25.6	ug/L	10.0	2.4	1	08/13/13 18:11	08/15/13 10:13	7439-93-2	D9
Magnesium, Dissolved	20200	ug/L	50.0	6.5	1	08/13/13 18:11	08/15/13 10:13	7439-95-4	D9
Potassium, Dissolved	3600	ug/L	500	44.4	1	08/13/13 18:11	08/15/13 10:13	7440-09-7	D9
Silicon, Dissolved	8170	ug/L	500	23.9	1	08/13/13 18:11	08/15/13 10:13	7440-21-3	
Sodium, Dissolved	16800	ug/L	500	21.7	1	08/13/13 18:11	08/15/13 10:13	7440-23-5	D9
Zinc, Dissolved	3700	ug/L	50.0	3.3	1	08/13/13 18:11	08/15/13 10:13	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.4	ug/L	1.0	0.050	1	08/13/13 18:11	08/14/13 22:28	7440-38-2	
Cadmium	21.2	ug/L	0.50	0.050	1	08/13/13 18:11	08/14/13 22:28	7440-43-9	
Chromium	0.60J	ug/L	1.0	0.070	1	08/13/13 18:11	08/14/13 22:28	7440-47-3	
Cobalt	2.6	ug/L	1.0	0.080	1	08/13/13 18:11	08/14/13 22:28	7440-48-4	
Copper	188	ug/L	1.0	0.12	1	08/13/13 18:11	08/14/13 22:28	7440-50-8	
Lead	15.4	ug/L	1.0	0.030	1	08/13/13 18:11	08/14/13 22:28	7439-92-1	
Manganese	1820	ug/L	1.0	0.14	1	08/13/13 18:11	08/14/13 22:28	7439-96-5	
Nickel	4.1	ug/L	1.0	0.070	1	08/13/13 18:11	08/14/13 22:28	7440-02-0	
Selenium	ND	ug/L	1.0	0.14	1	08/13/13 18:11	08/14/13 22:28	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.072J	ug/L	1.0	0.050	1	08/13/13 18:00	08/14/13 22:03	7440-38-2	
Cadmium, Dissolved	19.6	ug/L	0.50	0.050	1	08/13/13 18:00	08/14/13 22:03	7440-43-9	
Chromium, Dissolved	0.13J	ug/L	1.0	0.070	1	08/13/13 18:00	08/14/13 22:03	7440-47-3	
Cobalt, Dissolved	3.1	ug/L	1.0	0.080	1	08/13/13 18:00	08/14/13 22:03	7440-48-4	D9
Copper, Dissolved	14.2	ug/L	1.0	0.12	1	08/13/13 18:00	08/14/13 22:03	7440-50-8	
Lead, Dissolved	0.51J	ug/L	1.0	0.030	1	08/13/13 18:00	08/14/13 22:03	7439-92-1	B
Manganese, Dissolved	1880	ug/L	1.0	0.14	1	08/13/13 18:00	08/14/13 22:03	7439-96-5	D9
Nickel, Dissolved	4.7	ug/L	1.0	0.070	1	08/13/13 18:00	08/14/13 22:03	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	08/13/13 18:00	08/14/13 22:03	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	08/13/13 17:45	08/14/13 11:03	7439-97-6	

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60150754

Sample: DR3A1308080935		Lab ID: 60150754001		Collected: 08/08/13 09:35		Received: 08/09/13 09:45		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	08/16/13 14:00	08/19/13 10:29	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	132	mg/L	20.0	4.9	1		08/13/13 09:31		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	4.9	1		08/13/13 09:31		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	4.9	1		08/13/13 09:31		
Alkalinity, Total as CaCO ₃	132	mg/L	20.0	4.9	1		08/13/13 09:31		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.090	1		08/15/13 13:43	24959-67-9	
Chloride	0.90J	mg/L	1.0	0.50	1		08/15/13 13:43	16887-00-6	
Fluoride	2.5	mg/L	0.20	0.047	1		08/15/13 13:43	16984-48-8	
Sulfate	621	mg/L	50.0	8.0	50		08/16/13 11:07	14808-79-8	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60150754

QC Batch: MERP/7595

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury

Associated Lab Samples: 60150754001

METHOD BLANK: 1235705

Matrix: Water

Associated Lab Samples: 60150754001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	08/14/13 10:47	

LABORATORY CONTROL SAMPLE: 1235706

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.7	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1235707

1235708

Parameter	Units	60150897001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.8	4.8	96	97	70-130	1	20	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60150754

QC Batch: MERP/7604

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury - Dissolved

Associated Lab Samples: 60150754001

METHOD BLANK: 1236527

Matrix: Water

Associated Lab Samples: 60150754001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	08/19/13 10:25	

LABORATORY CONTROL SAMPLE: 1236528

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	5.0	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1236529

1236530

Parameter	Units	60150897001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury, Dissolved	ug/L	ND	5	5	5.2	5.2	103	103	70-130	0	20	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60150754

QC Batch: MPRP/23827

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60150754001

METHOD BLANK: 1235745

Matrix: Water

Associated Lab Samples: 60150754001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	08/15/13 09:45	
Calcium	ug/L	ND	100	08/15/13 09:45	
Iron	ug/L	ND	50.0	08/15/13 09:45	
Lithium	ug/L	ND	10.0	08/15/13 09:45	
Magnesium	ug/L	ND	50.0	08/15/13 09:45	
Potassium	ug/L	ND	500	08/15/13 09:45	
Silicon	ug/L	ND	500	08/15/13 09:45	
Sodium	ug/L	ND	500	08/15/13 09:45	
Zinc	ug/L	ND	50.0	08/15/13 09:45	

LABORATORY CONTROL SAMPLE: 1235746

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	10400	104	85-115	
Calcium	ug/L	10000	10200	102	85-115	
Iron	ug/L	10000	10400	104	85-115	
Lithium	ug/L	1000	1020	102	85-115	
Magnesium	ug/L	10000	10100	101	85-115	
Potassium	ug/L	10000	10400	104	85-115	
Silicon	ug/L	5000	5220	104	85-115	
Sodium	ug/L	10000	10200	102	85-115	
Zinc	ug/L	1000	1010	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1235747

1235748

Parameter	Units	60150754001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	910	10000	10000	11200	11100	103	102	70-130	1	8	
Calcium	ug/L	243000	10000	10000	251000	255000	79	119	70-130	2	9	
Iron	ug/L	8580	10000	10000	18600	18800	101	102	70-130	1	10	
Lithium	ug/L	24.6	1000	1000	1060	1050	104	103	70-130	1	20	
Magnesium	ug/L	19900	10000	10000	28700	29300	89	94	70-130	2	9	
Potassium	ug/L	3480	10000	10000	13800	13900	103	104	70-130	0	7	
Silicon	ug/L	8630	5000	5000	13600	13900	100	105	70-130	2	5	
Sodium	ug/L	16400	10000	10000	26400	26700	100	103	70-130	1	8	
Zinc	ug/L	4060	1000	1000	4880	5010	82	95	70-130	3	11	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60150754

QC Batch: MPRP/23828

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60150754001

METHOD BLANK: 1235749

Matrix: Water

Associated Lab Samples: 60150754001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	08/15/13 09:48	
Calcium, Dissolved	ug/L	ND	100	08/15/13 09:48	
Iron, Dissolved	ug/L	ND	50.0	08/15/13 09:48	
Lithium, Dissolved	ug/L	ND	10.0	08/15/13 09:48	
Magnesium, Dissolved	ug/L	ND	50.0	08/15/13 09:48	
Potassium, Dissolved	ug/L	ND	500	08/15/13 09:48	
Silicon, Dissolved	ug/L	ND	500	08/15/13 09:48	
Sodium, Dissolved	ug/L	ND	500	08/15/13 09:48	
Zinc, Dissolved	ug/L	ND	50.0	08/15/13 09:48	

LABORATORY CONTROL SAMPLE: 1235750

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	10300	103	85-115	
Calcium, Dissolved	ug/L	10000	10100	101	85-115	
Iron, Dissolved	ug/L	10000	10300	103	85-115	
Lithium, Dissolved	ug/L	1000	1020	102	85-115	
Magnesium, Dissolved	ug/L	10000	10000	100	85-115	
Potassium, Dissolved	ug/L	10000	10300	103	85-115	
Silicon, Dissolved	ug/L	5000	5160	103	85-115	
Sodium, Dissolved	ug/L	10000	10100	101	85-115	
Zinc, Dissolved	ug/L	1000	1010	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1235751

1235752

Parameter	Units	60150754001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	89.2	10000	10000	10300	10400	102	103	70-130	1	8	
Calcium, Dissolved	ug/L	250000	10000	10000	249000	256000	-12	57	70-130	3	9	M1
Iron, Dissolved	ug/L	1090	10000	10000	11100	11200	100	101	70-130	1	10	
Lithium, Dissolved	ug/L	25.6	1000	1000	1060	1060	103	104	70-130	1	20	
Magnesium, Dissolved	ug/L	20200	10000	10000	28700	29400	86	92	70-130	2	9	
Potassium, Dissolved	ug/L	3600	10000	10000	13800	13900	101	103	70-130	1	7	
Silicon, Dissolved	ug/L	8170	5000	5000	12800	13100	93	98	70-130	2	5	
Sodium, Dissolved	ug/L	16800	10000	10000	26200	26800	94	100	70-130	2	8	
Zinc, Dissolved	ug/L	3700	1000	1000	4480	4560	78	86	70-130	2	11	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60150754

QC Batch: MPRP/23829

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET

Associated Lab Samples: 60150754001

METHOD BLANK: 1235753

Matrix: Water

Associated Lab Samples: 60150754001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	08/14/13 22:45	
Cadmium	ug/L	ND	0.50	08/14/13 22:45	
Chromium	ug/L	ND	1.0	08/14/13 22:45	
Cobalt	ug/L	ND	1.0	08/14/13 22:45	
Copper	ug/L	ND	1.0	08/14/13 22:45	
Lead	ug/L	0.28J	1.0	08/14/13 22:45	
Manganese	ug/L	ND	1.0	08/14/13 22:45	
Nickel	ug/L	0.081J	1.0	08/14/13 22:45	
Selenium	ug/L	ND	1.0	08/14/13 22:45	

LABORATORY CONTROL SAMPLE: 1235754

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	40.8	102	85-115	
Cadmium	ug/L	40	40.6	102	85-115	
Chromium	ug/L	40	41.1	103	85-115	
Cobalt	ug/L	40	40.7	102	85-115	
Copper	ug/L	40	40.6	102	85-115	
Lead	ug/L	40	40.3	101	85-115	
Manganese	ug/L	40	41.0	102	85-115	
Nickel	ug/L	40	40.4	101	85-115	
Selenium	ug/L	40	41.1	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1235755

1235756

Parameter	Units	60150897001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	1.5	40	40	43.4	42.1	105	101	70-130	3	20	
Cadmium	ug/L	21.6	40	40	61.6	59.9	100	96	70-130	3	20	
Chromium	ug/L	0.64J	40	40	41.4	40.7	102	100	70-130	2	20	
Cobalt	ug/L	2.6	40	40	42.5	41.7	100	98	70-130	2	20	
Copper	ug/L	200	40	40	238	236	96	91	70-130	1	20	
Lead	ug/L	16.9	40	40	59.0	58.4	105	104	70-130	1	20	
Manganese	ug/L	1860	40	40	1930	1920	178	152	70-130	1	20 M1	
Nickel	ug/L	4.1	40	40	42.3	41.8	96	94	70-130	1	20	
Selenium	ug/L	ND	40	40	41.1	40.5	103	101	70-130	2	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT
Pace Project No.: 60150754

QC Batch: MPRP/23830 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60150754001

METHOD BLANK: 1235757 Matrix: Water
Associated Lab Samples: 60150754001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	08/14/13 21:55	
Cadmium, Dissolved	ug/L	ND	0.50	08/14/13 21:55	
Chromium, Dissolved	ug/L	ND	1.0	08/14/13 21:55	
Cobalt, Dissolved	ug/L	ND	1.0	08/14/13 21:55	
Copper, Dissolved	ug/L	ND	1.0	08/14/13 21:55	
Lead, Dissolved	ug/L	0.26J	1.0	08/14/13 21:55	
Manganese, Dissolved	ug/L	ND	1.0	08/14/13 21:55	
Nickel, Dissolved	ug/L	0.10J	1.0	08/14/13 21:55	
Selenium, Dissolved	ug/L	ND	1.0	08/14/13 21:55	

LABORATORY CONTROL SAMPLE: 1235758

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	40.3	101	85-115	
Cadmium, Dissolved	ug/L	40	39.6	99	85-115	
Chromium, Dissolved	ug/L	40	40.0	100	85-115	
Cobalt, Dissolved	ug/L	40	39.8	99	85-115	
Copper, Dissolved	ug/L	40	40.2	101	85-115	
Lead, Dissolved	ug/L	40	38.9	97	85-115	
Manganese, Dissolved	ug/L	40	39.5	99	85-115	
Nickel, Dissolved	ug/L	40	39.9	100	85-115	
Selenium, Dissolved	ug/L	40	40.0	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1235759 1235760

Parameter	Units	60150897001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	0.069J	40	40	40.6	42.1	101	105	70-130	4	20	
Cadmium, Dissolved	ug/L	19.6	40	40	58.6	59.7	98	100	70-130	2	20	
Chromium, Dissolved	ug/L	0.16J	40	40	39.9	41.1	99	102	70-130	3	20	
Cobalt, Dissolved	ug/L	3.0	40	40	42.2	42.9	98	100	70-130	2	20	
Copper, Dissolved	ug/L	14.6	40	40	52.1	53.4	94	97	70-130	2	20	
Lead, Dissolved	ug/L	0.29J	40	40	41.2	42.0	102	104	70-130	2	20	
Manganese, Dissolved	ug/L	1860	40	40	1940	1940	178	175	70-130	0	20 M1	
Nickel, Dissolved	ug/L	4.4	40	40	43.0	42.9	96	96	70-130	0	20	
Selenium, Dissolved	ug/L	ND	40	40	41.8	42.4	104	106	70-130	1	20	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60150754

QC Batch: WET/42825

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60150754001

METHOD BLANK: 1234866

Matrix: Water

Associated Lab Samples: 60150754001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	08/13/13 08:11	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	08/13/13 08:11	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	08/13/13 08:11	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	08/13/13 08:11	

LABORATORY CONTROL SAMPLE: 1234867

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	493	99	90-110	

SAMPLE DUPLICATE: 1234870

Parameter	Units	60150350001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	406	418	3	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	406	418	3	10	

SAMPLE DUPLICATE: 1234872

Parameter	Units	60150420001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	459	463	1	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	459	463	1	10	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60150754

QC Batch: WETA/25807

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60150754001

METHOD BLANK: 1237185

Matrix: Water

Associated Lab Samples: 60150754001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	08/15/13 13:12	
Chloride	mg/L	ND	1.0	08/15/13 13:12	
Fluoride	mg/L	ND	0.20	08/15/13 13:12	

METHOD BLANK: 1237485

Matrix: Water

Associated Lab Samples: 60150754001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.0	08/16/13 10:09	

LABORATORY CONTROL SAMPLE: 1237186

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.0	100	90-110	
Chloride	mg/L	5	4.9	98	90-110	
Fluoride	mg/L	2.5	2.6	103	90-110	

LABORATORY CONTROL SAMPLE: 1237486

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	4.9	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1236511

1236512

Parameter	Units	60150754001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Bromide	mg/L	ND	5	5	4.9	4.9	99	98	75-119	1	10
Chloride	mg/L	0.90J	5	5	5.2	5.2	87	86	64-118	1	12
Fluoride	mg/L	2.5	2.5	2.5	5.1	5.1	107	108	75-110	0	10
Sulfate	mg/L	621	250	250	873	864	101	97	61-119	1	10

MATRIX SPIKE SAMPLE: 1236513

Parameter	Units	60150468002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	100	100	100	75-119	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60150754

MATRIX SPIKE SAMPLE:		1236513					
Parameter	Units	60150468002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	89.4	100	185	96	64-118	
Fluoride	mg/L	ND	50	53.2	106	75-110	
Sulfate	mg/L	197	100	321	125	61-119	M1

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60150754

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60150754

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60150754001	DR3A1308080935	EPA 200.7	MPRP/23827	EPA 200.7	ICP/18668
60150754001	DR3A1308080935	EPA 200.7	MPRP/23828	EPA 200.7	ICP/18669
60150754001	DR3A1308080935	EPA 200.8	MPRP/23829	EPA 200.8	ICPM/2443
60150754001	DR3A1308080935	EPA 200.8	MPRP/23830	EPA 200.8	ICPM/2444
60150754001	DR3A1308080935	EPA 245.1	MERP/7595	EPA 245.1	MERC/7551
60150754001	DR3A1308080935	EPA 245.1	MERP/7604	EPA 245.1	MERC/7561
60150754001	DR3A1308080935	SM 2320B	WET/42825		
60150754001	DR3A1308080935	EPA 300.0	WETA/25807		

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WO#: 60150754



60150754



**Sample Condition Upon Receipt
ESI Tech Spec Client**

Client Name: BP Amec

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☒ Other ☐

Tracking #: 127320872210060345 Pace Shipping Label Used? Yes ☒ No ☐

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☒ 2" U

Thermometer Used: T-112 / T-194

Type of Ice: Wet Blue ☐ None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 1.7

Date and initials of person examining contents: 8/9/13 [Signature]

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7. <u>Rush by 8/9</u>
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses	Matrix: <u>wt</u>	13.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:

Client Notification/ Resolution:

Copy COC to Client? Y ☐ N ☒

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [Signature]

Date: 8/9/13

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: <u>1212</u>	Start:
End: <u>1215</u>	End:
Temp:	Temp:

Laboratory Management Program Lab Chain of Custody Record

Page 1 of 1

BP/ARC Project Name: Rico-Argentine Mine Site

Req Due Date (mm/dd/yy): _____

Rush TAT: Yes ☒ No ☐

BP/ARC Facility No: _____

Lab Work Order Number: 60156754

Lab Name: Pace Analytical Laboratories, Inc.				BP/ARC Facility Address: Rico-Argentine Mine				Consultant/Contractor: AMEC E&I, Inc.														
Lab Address: 9608 Loiret Blvd., Lenexa, KS 66219				City, State, ZIP Code: Rico, Colorado				Consultant/Contractor Project No: SA11161313.300H														
Lab PM: Heather Wilson				Lead Regulatory Agency: U.S. EPA Region 8				Address: 10670 White Rock Road, Suite 100, Rancho Cordova, CA														
Lab Phone: (913) 563-1407				California Global ID No.: NA				Consultant/Contractor PM: Marc Lombardi														
Lab Shipping Acct: UPS # 733W87				Enfos Proposal No: D009D-0057 WR 268175				Phone: 916-636-3200														
Lab Bottle Order No: NA				Accounting Mode: Provision <input checked="" type="checkbox"/> OOC-BU <input type="checkbox"/> OOC-RM <input type="checkbox"/>				Email Report/EDD To: lynda.lombardi@amec.com														
Other Info: 2013 517 Injection Treatability Study				Stage: 4-Execute Activity: Spend				Invoice To: BP/ARC <input checked="" type="checkbox"/> Contractor <input type="checkbox"/>														
BP/ARC EBM: Anthony Brown				Matrix		No. Containers / Preservative		Requested Analyses				Report Type & QC Level										
EBM Phone: 714-228-6770												Standard <input checked="" type="checkbox"/>										
EBM Email: anthony.brown@bp.com												Full Data Package <input type="checkbox"/>										
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Methanol	Tot Metals-see notes (E200.7/200.8/E245.1)	Dis Metals-see notes (E200.7/200.8/E245.1)	Alkalinity-Total HCO ₃ , CO ₃ , OH (SM2320B)	Bromide (E300.0)	Chloride (E300.0)	Fluoride (E300.0)	Sulfate (E300.0)	Comments		
	DR3A0130080935	8/8/13	9:35	X			3	1		2	BP/ARC		X	X	X	X	X	X	X	X	X	<p>Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.</p> <p>Dissolved metals samples are field filtered.</p>
				Metals are: Al, Ca, Fe, K, Li, Na, Mg, Si, Zn (E200.7); As, Cd, Co, Cr, Cu, Mn, Ni, Pb, Se (E200.8); and Hg (E245.1)																		
				RUSH 5-day TAT																		
Sampler's Name: <u>M. Capener</u>				Relinquished By / Affiliation: <u>M. Capener/ARCI / 8/8/13</u>				Date: <u>8/8/13</u>	Time: <u>1400</u>	Accepted By / Affiliation: <u>E Brackett / Pace</u>				Date: <u>8/9</u>	Time: <u>0945</u>							
Sampler's Company: <u>ARCI</u>																						
Ship/Receipt Method: <u>UPS</u>				Ship Date: <u>8/8/13</u>																		
Ship/Receipt Tracking No: <u>733W87 12733W872210060345</u>																						
Special Instructions:																						
THIS LINE - LAB USE ONLY: Custody Seals In Place: <input checked="" type="checkbox"/> Yes / No <input type="checkbox"/> Temp Blank: <input checked="" type="checkbox"/> Yes / No <input type="checkbox"/> Cooler Temp on Receipt: <u>1.7</u> °F/C Trip Blank: Yes / <input checked="" type="checkbox"/> No MS/MSD Sample Submitted: Yes / <input checked="" type="checkbox"/> No																						

August 19, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: Rico-Argentine Mine Site
Pace Project No.: 60150897

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on August 13, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Rico-Argentine Mine Site

Pace Project No.: 60150897

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Rico-Argentine Mine Site

Pace Project No.: 60150897

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60150897001	DR3A1308121115	Water	08/12/13 11:15	08/13/13 10:10

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SAMPLE ANALYTE COUNT

Project: Rico-Argentine Mine Site

Pace Project No.: 60150897

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60150897001	DR3A1308121115	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	TJT	1
		EPA 245.1	TJT	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60150897

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: August 19, 2013

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60150897

Method: EPA 200.7
Description: 200.7 Metals, Dissolved
Client: BP AMEC
Date: August 19, 2013

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23828

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60150754001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1235751)
 - Calcium, Dissolved
- MSD (Lab ID: 1235752)
 - Calcium, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60150897

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: August 19, 2013

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23829

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60150897001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1235755)
 - Manganese
- MSD (Lab ID: 1235756)
 - Manganese

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60150897

Method: EPA 200.8
Description: 200.8 MET ICPMS, Dissolved
Client: BP AMEC
Date: August 19, 2013

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23830

B: Analyte was detected in the associated method blank.

- BLANK for HBN 302633 [MPRP/238 (Lab ID: 1235757)]
- Lead, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23830

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60150897001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1235759)
 - Manganese, Dissolved
- MSD (Lab ID: 1235760)
 - Manganese, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60150897

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: August 19, 2013

General Information:

1 sample was analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60150897

Method: EPA 245.1

Description: 245.1 Mercury, Dissolved

Client: BP AMEC

Date: August 19, 2013

General Information:

1 sample was analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60150897

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: August 19, 2013

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

QC Batch: WET/42894

D6: The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.

- DUP (Lab ID: 1236607)
 - Alkalinity, Carbonate (CaCO₃)
 - Alkalinity, Hydroxide (CaCO₃)

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60150897

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: August 19, 2013

General Information:

1 sample was analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60150897

Sample: DR3A1308121115 Lab ID: 60150897001 Collected: 08/12/13 11:15 Received: 08/13/13 10:10 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	992	ug/L	75.0	16.6	1	08/13/13 18:11	08/15/13 10:10	7429-90-5	
Calcium	248000	ug/L	100	10.4	1	08/13/13 18:11	08/15/13 10:10	7440-70-2	
Iron	9160	ug/L	50.0	11.6	1	08/13/13 18:11	08/15/13 10:10	7439-89-6	
Lithium	24.5	ug/L	10.0	2.4	1	08/13/13 18:11	08/15/13 10:10	7439-93-2	
Magnesium	20200	ug/L	50.0	6.5	1	08/13/13 18:11	08/15/13 10:10	7439-95-4	
Potassium	3560	ug/L	500	44.4	1	08/13/13 18:11	08/15/13 10:10	7440-09-7	
Silicon	8960	ug/L	500	23.9	1	08/13/13 18:11	08/15/13 10:10	7440-21-3	
Sodium	16300	ug/L	500	21.7	1	08/13/13 18:11	08/15/13 10:10	7440-23-5	
Zinc	4140	ug/L	50.0	3.3	1	08/13/13 18:11	08/15/13 10:10	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	99.7	ug/L	75.0	16.6	1	08/13/13 18:11	08/15/13 10:35	7429-90-5	
Calcium, Dissolved	243000	ug/L	100	10.4	1	08/13/13 18:11	08/15/13 10:35	7440-70-2	
Iron, Dissolved	1030	ug/L	50.0	11.6	1	08/13/13 18:11	08/15/13 10:35	7439-89-6	
Lithium, Dissolved	26.3	ug/L	10.0	2.4	1	08/13/13 18:11	08/15/13 10:35	7439-93-2	D9
Magnesium, Dissolved	19900	ug/L	50.0	6.5	1	08/13/13 18:11	08/15/13 10:35	7439-95-4	
Potassium, Dissolved	3470	ug/L	500	44.4	1	08/13/13 18:11	08/15/13 10:35	7440-09-7	
Silicon, Dissolved	8030	ug/L	500	23.9	1	08/13/13 18:11	08/15/13 10:35	7440-21-3	
Sodium, Dissolved	16100	ug/L	500	21.7	1	08/13/13 18:11	08/15/13 10:35	7440-23-5	
Zinc, Dissolved	3680	ug/L	50.0	3.3	1	08/13/13 18:11	08/15/13 10:35	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.5	ug/L	1.0	0.050	1	08/13/13 18:11	08/14/13 22:53	7440-38-2	
Cadmium	21.6	ug/L	0.50	0.050	1	08/13/13 18:11	08/14/13 22:53	7440-43-9	
Chromium	0.64J	ug/L	1.0	0.070	1	08/13/13 18:11	08/14/13 22:53	7440-47-3	
Cobalt	2.6	ug/L	1.0	0.080	1	08/13/13 18:11	08/14/13 22:53	7440-48-4	
Copper	200	ug/L	1.0	0.12	1	08/13/13 18:11	08/14/13 22:53	7440-50-8	
Lead	16.9	ug/L	1.0	0.030	1	08/13/13 18:11	08/14/13 22:53	7439-92-1	
Manganese	1860	ug/L	1.0	0.14	1	08/13/13 18:11	08/14/13 22:53	7439-96-5	M1
Nickel	4.1	ug/L	1.0	0.070	1	08/13/13 18:11	08/14/13 22:53	7440-02-0	
Selenium	ND	ug/L	1.0	0.14	1	08/13/13 18:11	08/14/13 22:53	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.069J	ug/L	1.0	0.050	1	08/13/13 18:00	08/14/13 22:07	7440-38-2	
Cadmium, Dissolved	19.6	ug/L	0.50	0.050	1	08/13/13 18:00	08/14/13 22:07	7440-43-9	
Chromium, Dissolved	0.16J	ug/L	1.0	0.070	1	08/13/13 18:00	08/14/13 22:07	7440-47-3	
Cobalt, Dissolved	3.0	ug/L	1.0	0.080	1	08/13/13 18:00	08/14/13 22:07	7440-48-4	D9
Copper, Dissolved	14.6	ug/L	1.0	0.12	1	08/13/13 18:00	08/14/13 22:07	7440-50-8	
Lead, Dissolved	0.29J	ug/L	1.0	0.030	1	08/13/13 18:00	08/14/13 22:07	7439-92-1	B
Manganese, Dissolved	1860	ug/L	1.0	0.14	1	08/13/13 18:00	08/14/13 22:07	7439-96-5	M1
Nickel, Dissolved	4.4	ug/L	1.0	0.070	1	08/13/13 18:00	08/14/13 22:07	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	08/13/13 18:00	08/14/13 22:07	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	08/13/13 17:45	08/14/13 11:16	7439-97-6	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60150897

Sample: DR3A1308121115		Lab ID: 60150897001		Collected: 08/12/13 11:15		Received: 08/13/13 10:10		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND ug/L		0.20	0.14	1	08/16/13 14:00	08/19/13 10:36	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	139 mg/L		20.0	4.9	1		08/15/13 12:09		
Alkalinity, Carbonate (CaCO ₃)	ND mg/L		20.0	4.9	1		08/15/13 12:09		
Alkalinity, Hydroxide (CaCO ₃)	ND mg/L		20.0	4.9	1		08/15/13 12:09		
Alkalinity, Total as CaCO ₃	139 mg/L		20.0	4.9	1		08/15/13 12:09		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND mg/L		1.0	0.090	1		08/17/13 15:13	24959-67-9	
Chloride	0.91J mg/L		1.0	0.50	1		08/17/13 15:13	16887-00-6	
Fluoride	2.3 mg/L		0.20	0.047	1		08/17/13 15:13	16984-48-8	
Sulfate	701 mg/L		50.0	8.0	50		08/17/13 15:27	14808-79-8	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60150897

QC Batch: MERP/7595

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury

Associated Lab Samples: 60150897001

METHOD BLANK: 1235705

Matrix: Water

Associated Lab Samples: 60150897001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	08/14/13 10:47	

LABORATORY CONTROL SAMPLE: 1235706

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.7	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1235707 1235708

Parameter	Units	60150897001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.8	4.8	96	97	70-130	1	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60150897

QC Batch: MERP/7604

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury - Dissolved

Associated Lab Samples: 60150897001

METHOD BLANK: 1236527

Matrix: Water

Associated Lab Samples: 60150897001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	08/19/13 10:25	

LABORATORY CONTROL SAMPLE: 1236528

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	5.0	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1236529 1236530

Parameter	Units	60150897001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury, Dissolved	ug/L	ND	5	5	5.2	5.2	103	103	70-130	0	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60150897

QC Batch: MPRP/23827 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60150897001

METHOD BLANK: 1235745 Matrix: Water
Associated Lab Samples: 60150897001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	08/15/13 09:45	
Calcium	ug/L	ND	100	08/15/13 09:45	
Iron	ug/L	ND	50.0	08/15/13 09:45	
Lithium	ug/L	ND	10.0	08/15/13 09:45	
Magnesium	ug/L	ND	50.0	08/15/13 09:45	
Potassium	ug/L	ND	500	08/15/13 09:45	
Silicon	ug/L	ND	500	08/15/13 09:45	
Sodium	ug/L	ND	500	08/15/13 09:45	
Zinc	ug/L	ND	50.0	08/15/13 09:45	

LABORATORY CONTROL SAMPLE: 1235746

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	10400	104	85-115	
Calcium	ug/L	10000	10200	102	85-115	
Iron	ug/L	10000	10400	104	85-115	
Lithium	ug/L	1000	1020	102	85-115	
Magnesium	ug/L	10000	10100	101	85-115	
Potassium	ug/L	10000	10400	104	85-115	
Silicon	ug/L	5000	5220	104	85-115	
Sodium	ug/L	10000	10200	102	85-115	
Zinc	ug/L	1000	1010	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1235747 1235748

Parameter	Units	60150754001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	910	10000	10000	11200	11100	103	102	70-130	1	8	
Calcium	ug/L	243000	10000	10000	251000	255000	79	119	70-130	2	9	
Iron	ug/L	8580	10000	10000	18600	18800	101	102	70-130	1	10	
Lithium	ug/L	24.6	1000	1000	1060	1050	104	103	70-130	1	20	
Magnesium	ug/L	19900	10000	10000	28700	29300	89	94	70-130	2	9	
Potassium	ug/L	3480	10000	10000	13800	13900	103	104	70-130	0	7	
Silicon	ug/L	8630	5000	5000	13600	13900	100	105	70-130	2	5	
Sodium	ug/L	16400	10000	10000	26400	26700	100	103	70-130	1	8	
Zinc	ug/L	4060	1000	1000	4880	5010	82	95	70-130	3	11	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60150897

QC Batch: MPRP/23828 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Dissolved
Associated Lab Samples: 60150897001

METHOD BLANK: 1235749 Matrix: Water
Associated Lab Samples: 60150897001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	08/15/13 09:48	
Calcium, Dissolved	ug/L	ND	100	08/15/13 09:48	
Iron, Dissolved	ug/L	ND	50.0	08/15/13 09:48	
Lithium, Dissolved	ug/L	ND	10.0	08/15/13 09:48	
Magnesium, Dissolved	ug/L	ND	50.0	08/15/13 09:48	
Potassium, Dissolved	ug/L	ND	500	08/15/13 09:48	
Silicon, Dissolved	ug/L	ND	500	08/15/13 09:48	
Sodium, Dissolved	ug/L	ND	500	08/15/13 09:48	
Zinc, Dissolved	ug/L	ND	50.0	08/15/13 09:48	

LABORATORY CONTROL SAMPLE: 1235750

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	10300	103	85-115	
Calcium, Dissolved	ug/L	10000	10100	101	85-115	
Iron, Dissolved	ug/L	10000	10300	103	85-115	
Lithium, Dissolved	ug/L	1000	1020	102	85-115	
Magnesium, Dissolved	ug/L	10000	10000	100	85-115	
Potassium, Dissolved	ug/L	10000	10300	103	85-115	
Silicon, Dissolved	ug/L	5000	5160	103	85-115	
Sodium, Dissolved	ug/L	10000	10100	101	85-115	
Zinc, Dissolved	ug/L	1000	1010	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1235751 1235752

Parameter	Units	60150754001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	89.2	10000	10000	10300	10400	102	103	70-130	1	8	
Calcium, Dissolved	ug/L	250000	10000	10000	249000	256000	-12	57	70-130	3	9 M1	
Iron, Dissolved	ug/L	1090	10000	10000	11100	11200	100	101	70-130	1	10	
Lithium, Dissolved	ug/L	25.6	1000	1000	1060	1060	103	104	70-130	1	20	
Magnesium, Dissolved	ug/L	20200	10000	10000	28700	29400	86	92	70-130	2	9	
Potassium, Dissolved	ug/L	3600	10000	10000	13800	13900	101	103	70-130	1	7	
Silicon, Dissolved	ug/L	8170	5000	5000	12800	13100	93	98	70-130	2	5	
Sodium, Dissolved	ug/L	16800	10000	10000	26200	26800	94	100	70-130	2	8	
Zinc, Dissolved	ug/L	3700	1000	1000	4480	4560	78	86	70-130	2	11	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60150897

QC Batch: MPRP/23829 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60150897001

METHOD BLANK: 1235753 Matrix: Water
Associated Lab Samples: 60150897001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	08/14/13 22:45	
Cadmium	ug/L	ND	0.50	08/14/13 22:45	
Chromium	ug/L	ND	1.0	08/14/13 22:45	
Cobalt	ug/L	ND	1.0	08/14/13 22:45	
Copper	ug/L	ND	1.0	08/14/13 22:45	
Lead	ug/L	0.28J	1.0	08/14/13 22:45	
Manganese	ug/L	ND	1.0	08/14/13 22:45	
Nickel	ug/L	0.081J	1.0	08/14/13 22:45	
Selenium	ug/L	ND	1.0	08/14/13 22:45	

LABORATORY CONTROL SAMPLE: 1235754

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	40.8	102	85-115	
Cadmium	ug/L	40	40.6	102	85-115	
Chromium	ug/L	40	41.1	103	85-115	
Cobalt	ug/L	40	40.7	102	85-115	
Copper	ug/L	40	40.6	102	85-115	
Lead	ug/L	40	40.3	101	85-115	
Manganese	ug/L	40	41.0	102	85-115	
Nickel	ug/L	40	40.4	101	85-115	
Selenium	ug/L	40	41.1	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1235755 1235756

Parameter	Units	60150897001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	1.5	40	40	43.4	42.1	105	101	70-130	3	20	
Cadmium	ug/L	21.6	40	40	61.6	59.9	100	96	70-130	3	20	
Chromium	ug/L	0.64J	40	40	41.4	40.7	102	100	70-130	2	20	
Cobalt	ug/L	2.6	40	40	42.5	41.7	100	98	70-130	2	20	
Copper	ug/L	200	40	40	238	236	96	91	70-130	1	20	
Lead	ug/L	16.9	40	40	59.0	58.4	105	104	70-130	1	20	
Manganese	ug/L	1860	40	40	1930	1920	178	152	70-130	1	20 M1	
Nickel	ug/L	4.1	40	40	42.3	41.8	96	94	70-130	1	20	
Selenium	ug/L	ND	40	40	41.1	40.5	103	101	70-130	2	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60150897

QC Batch: MPRP/23830 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60150897001

METHOD BLANK: 1235757 Matrix: Water
Associated Lab Samples: 60150897001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	08/14/13 21:55	
Cadmium, Dissolved	ug/L	ND	0.50	08/14/13 21:55	
Chromium, Dissolved	ug/L	ND	1.0	08/14/13 21:55	
Cobalt, Dissolved	ug/L	ND	1.0	08/14/13 21:55	
Copper, Dissolved	ug/L	ND	1.0	08/14/13 21:55	
Lead, Dissolved	ug/L	0.26J	1.0	08/14/13 21:55	
Manganese, Dissolved	ug/L	ND	1.0	08/14/13 21:55	
Nickel, Dissolved	ug/L	0.10J	1.0	08/14/13 21:55	
Selenium, Dissolved	ug/L	ND	1.0	08/14/13 21:55	

LABORATORY CONTROL SAMPLE: 1235758

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	40.3	101	85-115	
Cadmium, Dissolved	ug/L	40	39.6	99	85-115	
Chromium, Dissolved	ug/L	40	40.0	100	85-115	
Cobalt, Dissolved	ug/L	40	39.8	99	85-115	
Copper, Dissolved	ug/L	40	40.2	101	85-115	
Lead, Dissolved	ug/L	40	38.9	97	85-115	
Manganese, Dissolved	ug/L	40	39.5	99	85-115	
Nickel, Dissolved	ug/L	40	39.9	100	85-115	
Selenium, Dissolved	ug/L	40	40.0	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1235759 1235760

Parameter	Units	60150897001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	0.069J	40	40	40.6	42.1	101	105	70-130	4	20	
Cadmium, Dissolved	ug/L	19.6	40	40	58.6	59.7	98	100	70-130	2	20	
Chromium, Dissolved	ug/L	0.16J	40	40	39.9	41.1	99	102	70-130	3	20	
Cobalt, Dissolved	ug/L	3.0	40	40	42.2	42.9	98	100	70-130	2	20	
Copper, Dissolved	ug/L	14.6	40	40	52.1	53.4	94	97	70-130	2	20	
Lead, Dissolved	ug/L	0.29J	40	40	41.2	42.0	102	104	70-130	2	20	
Manganese, Dissolved	ug/L	1860	40	40	1940	1940	178	175	70-130	0	20 M1	
Nickel, Dissolved	ug/L	4.4	40	40	43.0	42.9	96	96	70-130	0	20	
Selenium, Dissolved	ug/L	ND	40	40	41.8	42.4	104	106	70-130	1	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60150897

QC Batch:	WET/42894	Analysis Method:	SM 2320B
QC Batch Method:	SM 2320B	Analysis Description:	2320B Alkalinity
Associated Lab Samples:	60150897001		

METHOD BLANK: 1236603 Matrix: Water
Associated Lab Samples: 60150897001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	08/15/13 11:49	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	08/15/13 11:49	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	08/15/13 11:49	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	08/15/13 11:49	

LABORATORY CONTROL SAMPLE: 1236604

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	492	98	90-110	

SAMPLE DUPLICATE: 1236607

Parameter	Units	60150856002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	140	104	29	10	D6
Alkalinity, Hydroxide (CaCO ₃)	mg/L	51.7	73.8	35	10	D6
Alkalinity, Total as CaCO ₃	mg/L	192	178	7	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	ND		10	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60150897

QC Batch: WETA/25834 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60150897001

METHOD BLANK: 1237933 Matrix: Water
Associated Lab Samples: 60150897001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	08/17/13 09:27	
Chloride	mg/L	ND	1.0	08/17/13 09:27	
Fluoride	mg/L	ND	0.20	08/17/13 09:27	
Sulfate	mg/L	ND	1.0	08/17/13 09:27	

LABORATORY CONTROL SAMPLE: 1237934

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.9	98	90-110	
Chloride	mg/L	5	4.9	97	90-110	
Fluoride	mg/L	2.5	2.6	102	90-110	
Sulfate	mg/L	5	5.4	109	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1237935 1237936

Parameter	Units	60150359001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	ND	5	5	5.0	5.0	100	100	75-119	0	10	
Chloride	mg/L	5.2	5	5	9.7	9.7	90	90	64-118	0	12	
Fluoride	mg/L	0.52	2.5	2.5	3.1	3.0	103	101	75-110	2	10	
Sulfate	mg/L	7.3	5	5	12.1	12.1	97	97	61-119	0	10	

MATRIX SPIKE SAMPLE: 1237937

Parameter	Units	60150632002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	1000	958	96	75-119	
Chloride	mg/L	276	1000	1110	83	64-118	
Fluoride	mg/L	ND	500	474	95	75-110	
Sulfate	mg/L	1430	1000	2420	99	61-119	

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Rico-Argentine Mine Site

Pace Project No.: 60150897

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D6 The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rico-Argentine Mine Site

Pace Project No.: 60150897

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60150897001	DR3A1308121115	EPA 200.7	MPRP/23827	EPA 200.7	ICP/18668
60150897001	DR3A1308121115	EPA 200.7	MPRP/23828	EPA 200.7	ICP/18669
60150897001	DR3A1308121115	EPA 200.8	MPRP/23829	EPA 200.8	ICPM/2443
60150897001	DR3A1308121115	EPA 200.8	MPRP/23830	EPA 200.8	ICPM/2444
60150897001	DR3A1308121115	EPA 245.1	MERP/7595	EPA 245.1	MERC/7551
60150897001	DR3A1308121115	EPA 245.1	MERP/7604	EPA 245.1	MERC/7561
60150897001	DR3A1308121115	SM 2320B	WET/42894		
60150897001	DR3A1308121115	EPA 300.0	WETA/25834		

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WO#: 60150897



60150897



Sample Condition Upon Receipt ESI Tech Spec Client

Client Name: BP RICO

Optional

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Proj Due Date:

Tracking #: 1Z 733 W87 84 4721 6797 Pace Shipping Label Used? Yes ☐ No ☒

Proj Name:

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☒ Other ☐Thermometer Used: T-112 / T-194Type of Ice: Wet Blue ☐ None ☐ Samples received on ice, cooling process has begun.
(circle one)Cooler Temperature: 5.3Date and initials of person examining contents: KE 8/13/13

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<u>KE 8/13/13</u> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7. <u>5 day TAT</u>
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Filtered volume received for dissolved tests?	<u>KE 8/13/13</u> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Includes date/time/ID/analyses	Matrix: <u>WT</u>	15.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	16.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	17.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	17. List State:

Client Notification/ Resolution:

Copy COC to Client? Y ☒ N ☐Field Data Required? Y ☐ N ☐

Person Contacted: _____

Date/Time: _____

Comments/ Resolution: _____

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: 1150 Start:End: 1155 End:

Temp: _____ Temp:

Project Manager Review: dmwDate: 8/13/13

Laboratory Management Program Chain of Custody Record

Page 1 of 1

BP/ARC Project Name: Rico-Argentine Mine Site

Req Due Date (mm/dd/yy): _____ Rush TAT: Yes X No _____

BP/ARC Facility No: _____

Lab Work Order Number: _____

Lab Name: Pace Analytical Laboratories, Inc.				BP/ARC Facility Address: Rico-Argentine Mine				Consultant/Contractor: AMEC E&I, Inc.															
Lab Address: 9608 Loiret Blvd., Lenexa, KS 66219				City, State, ZIP Code: Rico, Colorado				Consultant/Contractor Project No: SA11161313.300H															
Lab PM: Heather Wilson				Lead Regulatory Agency: U.S. EPA Region 8				Address: 10670 White Rock Road, Suite 100, Rancho Cordova, CA															
Lab Phone: (913) 563-1407				California Global ID No.: NA				Consultant/Contractor PM: Marc Lombardi															
Lab Shipping Acct: UPS # 733W87				Enfos Proposal No: D009D-0057 WR 268175				Phone: 916-636-3200															
Lab Bottle Order No: NA				Accounting Mode: Provision <u>X</u> OOC-BU _____ OOC-RM _____				Email Report/EDD To: lynda.lombardi@amec.com															
Other Info: 2013 517 Injection Treatability Study				Stage: 4-Execute Activity: Spend				Invoice To: BP/ARC <u>X</u> Contractor _____															
BP/ARC EBM: Anthony Brown				Matrix		No. Containers / Preservative		Requested Analyses				Report Type & QC Level											
EBM Phone: 714-228-6770												Standard <u>X</u>											
EBM Email: anthony.brown@bp.com												Full Data Package _____											
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Methanol	Tot Metals-see notes (E200.7/200.8/E245.1)	Dis Metals-see notes (E200.7/200.8/E245.1)	Alkalinity-Total, HCO ₃ , CO ₃ , OH (SM2320B)	Bromide (E300.0)	Chloride (E300.0)	Fluoride (E300.0)	Sulfate (E300.0)	Comments			
																						Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.	
	DR3A1308121115	8/12/13	11:15	X			3	1		2	2 (BP34)	1.5	X	X	X	X	X	X	X	X	1 (BP20)		Dissolved metals samples are field filtered.
																						001	
																							Metals are: Al, Ca, Fe, K, Li, Na, Mg, Si,
																							Zn (E200.7); As, Cd, Co, Cr, Cu, Mn, Ni,
																							Pb, Se (E200.8); and Hg (E245.1)
																							RUSH 5-day TAT
Sampler's Name: <u>Merete Capener</u>				Relinquished By / Affiliation				Date	Time	Accepted By / Affiliation				Date	Time								
Sampler's Company: <u>AECI</u>				<u>M. Capener / AECI / M. Capener</u>				<u>8/12/13</u>	<u>1400</u>	<u>Nyle S. / PAST</u>				<u>8/13/13</u>	<u>1010</u>								
Shipment Method: <u>UPS</u> Ship Date: <u>8/12/13</u>																							
Shipment Tracking No: <u>1Z 733 W87 84 4721 697</u>																							
Special Instructions:																							
THIS LINE - LAB USE ONLY: Custody Seals In Place: <u>Yes</u> / No Temp Blank: <u>Yes</u> / No Cooler Temp on Receipt: <u>5.3</u> °F/C Trip Blank: Yes / <u>No</u> MS/MSD Sample Submitted: Yes / <u>No</u>																							

August 30, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: 2013 517 INJECTION TREATABILIT
Pace Project No.: 60151227

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on August 16, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60151227

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

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SAMPLE SUMMARY

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60151227

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60151227001	DR3A1308151025	Water	08/15/13 10:25	08/16/13 10:05

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SAMPLE ANALYTE COUNT

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60151227

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60151227001	DR3A1308151025	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	TJT	1
		EPA 245.1	TJT	1
		SM 2320B	JMC1	4
		EPA 300.0	OL	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60151227

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: August 30, 2013

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23901

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60151149002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1238464)
 - Iron
 - Silicon
- MSD (Lab ID: 1238465)
 - Silicon

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60151227

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: August 30, 2013

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60151227

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: August 30, 2013

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23900

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60151227001,60151268002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1238459)
- Manganese

Additional Comments:

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60151227

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: August 30, 2013

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/24009

B: Analyte was detected in the associated method blank.

- BLANK for HBN 304578 [MPRP/240 (Lab ID: 1243421)
 - Chromium, Dissolved
 - Lead, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60151227

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: August 30, 2013

General Information:

1 sample was analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60151227

Method: EPA 245.1

Description: 245.1 Mercury, Dissolved

Client: BP AMEC

Date: August 30, 2013

General Information:

1 sample was analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60151227

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: August 30, 2013

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60151227

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: August 30, 2013

General Information:

1 sample was analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: WETA/25865

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60150708001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1238687)
 - Bromide
 - Chloride

R1: RPD value was outside control limits.

- MSD (Lab ID: 1238688)
 - Bromide
 - Chloride
 - Fluoride

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILITY

Pace Project No.: 60151227

Sample: DR3A1308151025 Lab ID: 60151227001 Collected: 08/15/13 10:25 Received: 08/16/13 10:05 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	972	ug/L	75.0	16.6	1	08/19/13 17:00	08/21/13 13:13	7429-90-5	
Calcium	252000	ug/L	100	10.4	1	08/19/13 17:00	08/21/13 13:13	7440-70-2	
Iron	8740	ug/L	50.0	11.6	1	08/19/13 17:00	08/21/13 13:13	7439-89-6	
Lithium	25.2	ug/L	10.0	2.4	1	08/19/13 17:00	08/21/13 13:13	7439-93-2	
Magnesium	20600	ug/L	50.0	6.5	1	08/19/13 17:00	08/21/13 13:13	7439-95-4	
Potassium	3400	ug/L	500	44.4	1	08/19/13 17:00	08/21/13 13:13	7440-09-7	
Silicon	8690	ug/L	500	23.9	1	08/19/13 17:00	08/21/13 13:13	7440-21-3	
Sodium	15900	ug/L	500	21.7	1	08/19/13 17:00	08/21/13 13:13	7440-23-5	
Zinc	4230	ug/L	50.0	3.3	1	08/19/13 17:00	08/21/13 13:13	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	90.4	ug/L	75.0	16.6	1	08/28/13 08:45	08/28/13 15:40	7429-90-5	
Calcium, Dissolved	235000	ug/L	100	10.4	1	08/28/13 08:45	08/28/13 15:40	7440-70-2	
Iron, Dissolved	884	ug/L	50.0	11.6	1	08/28/13 08:45	08/28/13 15:40	7439-89-6	
Lithium, Dissolved	23.5	ug/L	10.0	2.4	1	08/28/13 08:45	08/28/13 15:40	7439-93-2	
Magnesium, Dissolved	18200	ug/L	50.0	6.5	1	08/28/13 08:45	08/28/13 15:40	7439-95-4	
Potassium, Dissolved	3170	ug/L	500	44.4	1	08/28/13 08:45	08/28/13 15:40	7440-09-7	
Silicon, Dissolved	7490	ug/L	500	23.9	1	08/28/13 08:45	08/28/13 15:40	7440-21-3	
Sodium, Dissolved	15300	ug/L	500	21.7	1	08/28/13 08:45	08/28/13 15:40	7440-23-5	
Zinc, Dissolved	3480	ug/L	50.0	3.3	1	08/28/13 08:45	08/28/13 15:40	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Chromium	0.50J	ug/L	1.0	0.070	1	08/19/13 17:00	08/20/13 12:05	7440-47-3	
Manganese	2050	ug/L	1.0	0.14	1	08/19/13 17:00	08/20/13 12:05	7439-96-5	M1
Cobalt	2.6	ug/L	1.0	0.080	1	08/19/13 17:00	08/20/13 12:05	7440-48-4	
Nickel	4.1	ug/L	1.0	0.070	1	08/19/13 17:00	08/20/13 12:05	7440-02-0	
Copper	196	ug/L	1.0	0.12	1	08/19/13 17:00	08/20/13 12:05	7440-50-8	
Arsenic	1.8	ug/L	1.0	0.050	1	08/19/13 17:00	08/20/13 12:05	7440-38-2	
Selenium	0.24J	ug/L	1.0	0.14	1	08/19/13 17:00	08/20/13 12:05	7782-49-2	
Cadmium	21.4	ug/L	0.50	0.050	1	08/19/13 17:00	08/20/13 12:05	7440-43-9	
Lead	16.2	ug/L	1.0	0.030	1	08/19/13 17:00	08/20/13 12:05	7439-92-1	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.20J	ug/L	1.0	0.050	1	08/28/13 08:45	08/28/13 15:01	7440-38-2	
Cadmium, Dissolved	19.5	ug/L	0.50	0.050	1	08/28/13 08:45	08/28/13 15:01	7440-43-9	
Chromium, Dissolved	0.25J	ug/L	1.0	0.070	1	08/28/13 08:45	08/28/13 15:01	7440-47-3	B
Cobalt, Dissolved	2.7	ug/L	1.0	0.080	1	08/28/13 08:45	08/28/13 15:01	7440-48-4	D9
Copper, Dissolved	14.8	ug/L	1.0	0.12	1	08/28/13 08:45	08/28/13 15:01	7440-50-8	
Lead, Dissolved	0.063J	ug/L	1.0	0.030	1	08/28/13 08:45	08/28/13 15:01	7439-92-1	B
Manganese, Dissolved	1870	ug/L	1.0	0.14	1	08/28/13 08:45	08/28/13 15:01	7439-96-5	
Nickel, Dissolved	4.2	ug/L	1.0	0.070	1	08/28/13 08:45	08/28/13 15:01	7440-02-0	D9
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	08/28/13 08:45	08/28/13 15:01	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	08/19/13 17:00	08/22/13 09:31	7439-97-6	

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ANALYTICAL RESULTS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60151227

Sample: DR3A1308151025		Lab ID: 60151227001		Collected: 08/15/13 10:25		Received: 08/16/13 10:05		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	08/21/13 16:40	08/22/13 11:02	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	139	mg/L	20.0	4.9	1		08/20/13 09:11		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	4.9	1		08/20/13 09:11		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	4.9	1		08/20/13 09:11		
Alkalinity, Total as CaCO ₃	139	mg/L	20.0	4.9	1		08/20/13 09:11		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.090	1		08/20/13 12:37	24959-67-9	
Chloride	0.87J	mg/L	1.0	0.50	1		08/20/13 12:37	16887-00-6	
Fluoride	2.4	mg/L	0.20	0.047	1		08/20/13 12:37	16984-48-8	
Sulfate	617	mg/L	50.0	8.0	50		08/20/13 12:53	14808-79-8	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60151227

QC Batch: MERP/7614

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury

Associated Lab Samples: 60151227001

METHOD BLANK: 1238476

Matrix: Water

Associated Lab Samples: 60151227001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	08/22/13 09:26	

LABORATORY CONTROL SAMPLE: 1238477

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.5	90	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1238478

1238479

Parameter	Units	60151227001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.2	4.1	83	82	70-130	1	20	

MATRIX SPIKE SAMPLE: 1238480

Parameter	Units	60151150001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	ND	5	3.6	71	70-130	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60151227

QC Batch:	MERP/7627	Analysis Method:	EPA 245.1
QC Batch Method:	EPA 245.1	Analysis Description:	245.1 Mercury - Dissolved
Associated Lab Samples:	60151227001		

METHOD BLANK:	1239855	Matrix:	Water
Associated Lab Samples:	60151227001		

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	08/22/13 10:57	

LABORATORY CONTROL SAMPLE: 1239856						
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	4.4	87	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1239857													1239858		
Parameter	Units	60151227001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual			
Mercury, Dissolved	ug/L	ND	5	5	3.9	4.0	77	79	70-130	2	20				

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60151227

QC Batch: MPRP/23901

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60151227001

METHOD BLANK: 1238462

Matrix: Water

Associated Lab Samples: 60151227001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	08/21/13 13:07	
Calcium	ug/L	ND	100	08/21/13 13:07	
Iron	ug/L	ND	50.0	08/21/13 13:07	
Lithium	ug/L	ND	10.0	08/21/13 13:07	
Magnesium	ug/L	ND	50.0	08/21/13 13:07	
Potassium	ug/L	ND	500	08/21/13 13:07	
Silicon	ug/L	ND	500	08/21/13 13:07	
Sodium	ug/L	158J	500	08/21/13 13:07	
Zinc	ug/L	ND	50.0	08/21/13 13:07	

LABORATORY CONTROL SAMPLE: 1238463

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	10300	103	85-115	
Calcium	ug/L	10000	10200	102	85-115	
Iron	ug/L	10000	10300	103	85-115	
Lithium	ug/L	1000	1010	101	85-115	
Magnesium	ug/L	10000	10200	102	85-115	
Potassium	ug/L	10000	10300	103	85-115	
Silicon	ug/L	5000	5080	102	85-115	
Sodium	ug/L	10000	10200	102	85-115	
Zinc	ug/L	1000	1030	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1238464

1238465

Parameter	Units	60151149002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	2470	10000	10000	15500	15300	130	129	70-130	1	8	
Calcium	ug/L	210000	10000	10000	222000	222000	120	116	70-130	0	9	
Iron	ug/L	28800	10000	10000	42000	41600	132	128	70-130	1	10	M1
Lithium	ug/L	23.1	1000	1000	1070	1060	104	103	70-130	1	20	
Magnesium	ug/L	32800	10000	10000	44600	44300	118	114	70-130	1	9	
Potassium	ug/L	8150	10000	10000	19500	19400	114	112	70-130	1	7	
Silicon	ug/L	19100	5000	5000	29400	29200	206	201	70-130	1	5	M1
Sodium	ug/L	7320	10000	10000	18000	17800	106	105	70-130	1	8	
Zinc	ug/L	1330	1000	1000	2380	2370	106	105	70-130	0	11	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60151227

QC Batch: MPRP/24010

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Dissolved

Associated Lab Samples: 60151227001

METHOD BLANK: 1243430

Matrix: Water

Associated Lab Samples: 60151227001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	08/28/13 15:34	
Calcium, Dissolved	ug/L	ND	100	08/28/13 15:34	
Iron, Dissolved	ug/L	ND	50.0	08/28/13 15:34	
Lithium, Dissolved	ug/L	ND	10.0	08/28/13 15:34	
Magnesium, Dissolved	ug/L	21.2J	50.0	08/28/13 15:34	
Potassium, Dissolved	ug/L	ND	500	08/28/13 15:34	
Silicon, Dissolved	ug/L	ND	500	08/28/13 15:34	
Sodium, Dissolved	ug/L	ND	500	08/28/13 15:34	
Zinc, Dissolved	ug/L	ND	50.0	08/28/13 15:34	

LABORATORY CONTROL SAMPLE: 1243431

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	9930	99	85-115	
Calcium, Dissolved	ug/L	10000	9970	100	85-115	
Iron, Dissolved	ug/L	10000	9990	100	85-115	
Lithium, Dissolved	ug/L	1000	992	99	85-115	
Magnesium, Dissolved	ug/L	10000	9900	99	85-115	
Potassium, Dissolved	ug/L	10000	9860	99	85-115	
Silicon, Dissolved	ug/L	5000	5000	100	85-115	
Sodium, Dissolved	ug/L	10000	10000	100	85-115	
Zinc, Dissolved	ug/L	1000	1020	102	85-115	

MATRIX SPIKE SAMPLE: 1243433

Parameter	Units	60151227001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	90.4	10000	10200	101	70-130	
Calcium, Dissolved	ug/L	235000	10000	244000	90	70-130	
Iron, Dissolved	ug/L	884	10000	10900	100	70-130	
Lithium, Dissolved	ug/L	23.5	1000	1080	106	70-130	
Magnesium, Dissolved	ug/L	18200	10000	27600	94	70-130	
Potassium, Dissolved	ug/L	3170	10000	13600	104	70-130	
Silicon, Dissolved	ug/L	7490	5000	12700	104	70-130	
Sodium, Dissolved	ug/L	15300	10000	26400	111	70-130	
Zinc, Dissolved	ug/L	3480	1000	4320	84	70-130	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60151227

SAMPLE DUPLICATE: 1243432

Parameter	Units	60151227001 Result	Dup Result	RPD	Max RPD	Qualifiers
Aluminum, Dissolved	ug/L	90.4	87.9	3	20	
Calcium, Dissolved	ug/L	235000	223000	5	20	
Iron, Dissolved	ug/L	884	865	2	20	
Lithium, Dissolved	ug/L	23.5	22.4	5		
Magnesium, Dissolved	ug/L	18200	18200	0	20	
Potassium, Dissolved	ug/L	3170	3120	2	20	
Silicon, Dissolved	ug/L	7490	7310	2	20	
Sodium, Dissolved	ug/L	15300	15100	1	20	
Zinc, Dissolved	ug/L	3480	3520	1	20	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60151227

QC Batch:	MPRP/23900	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET
Associated Lab Samples:	60151227001		

METHOD BLANK: 1238457 Matrix: Water

Associated Lab Samples: 60151227001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	08/20/13 11:53	
Cadmium	ug/L	ND	0.50	08/20/13 11:53	
Chromium	ug/L	ND	1.0	08/20/13 11:53	
Cobalt	ug/L	ND	1.0	08/20/13 11:53	
Copper	ug/L	ND	1.0	08/20/13 11:53	
Lead	ug/L	0.31J	1.0	08/20/13 11:53	
Manganese	ug/L	0.34J	1.0	08/20/13 11:53	
Nickel	ug/L	ND	1.0	08/20/13 11:53	
Selenium	ug/L	ND	1.0	08/20/13 11:53	

LABORATORY CONTROL SAMPLE: 1238458

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	40.1	100	85-115	
Cadmium	ug/L	40	40.1	100	85-115	
Chromium	ug/L	40	40.2	101	85-115	
Cobalt	ug/L	40	39.8	99	85-115	
Copper	ug/L	40	40.0	100	85-115	
Lead	ug/L	40	39.5	99	85-115	
Manganese	ug/L	40	40.6	101	85-115	
Nickel	ug/L	40	40.3	101	85-115	
Selenium	ug/L	40	39.4	98	85-115	

MATRIX SPIKE SAMPLE: 1238459

Parameter	Units	60151227001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	1.8	40	42.7	102	70-130	
Cadmium	ug/L	21.4	40	60.5	98	70-130	
Chromium	ug/L	0.50J	40	39.2	97	70-130	
Cobalt	ug/L	2.6	40	40.5	95	70-130	
Copper	ug/L	196	40	228	78	70-130	
Lead	ug/L	16.2	40	55.0	97	70-130	
Manganese	ug/L	2050	40	2040	-25	70-130 M1	
Nickel	ug/L	4.1	40	41.8	94	70-130	
Selenium	ug/L	0.24J	40	42.0	104	70-130	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60151227

MATRIX SPIKE SAMPLE:		1238460					
Parameter	Units	60151268002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	18.9	40	62.8	110	70-130	
Cadmium	ug/L	ND	40	38.6	96	70-130	
Chromium	ug/L	2.7	40	41.3	96	70-130	
Cobalt	ug/L	ND	40	37.2	92	70-130	
Copper	ug/L	1.6	40	37.0	88	70-130	
Lead	ug/L	ND	40	40.8	100	70-130	
Manganese	ug/L	110	40	150	101	70-130	
Nickel	ug/L	3.2	40	39.3	90	70-130	
Selenium	ug/L	ND	40	43.1	107	70-130	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60151227

QC Batch: MPRP/24009

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET Dissolved

Associated Lab Samples: 60151227001

METHOD BLANK: 1243421

Matrix: Water

Associated Lab Samples: 60151227001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	08/28/13 14:53	
Cadmium, Dissolved	ug/L	ND	0.50	08/28/13 14:53	
Chromium, Dissolved	ug/L	0.093J	1.0	08/28/13 14:53	
Cobalt, Dissolved	ug/L	0.12J	1.0	08/28/13 14:53	
Copper, Dissolved	ug/L	0.15J	1.0	08/28/13 14:53	
Lead, Dissolved	ug/L	0.030J	1.0	08/28/13 14:53	
Manganese, Dissolved	ug/L	0.38J	1.0	08/28/13 14:53	
Nickel, Dissolved	ug/L	0.075J	1.0	08/28/13 14:53	
Selenium, Dissolved	ug/L	ND	1.0	08/28/13 14:53	

LABORATORY CONTROL SAMPLE: 1243422

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	39.9	100	85-115	
Cadmium, Dissolved	ug/L	40	39.9	100	85-115	
Chromium, Dissolved	ug/L	40	40.1	100	85-115	
Cobalt, Dissolved	ug/L	40	39.4	98	85-115	
Copper, Dissolved	ug/L	40	39.4	99	85-115	
Lead, Dissolved	ug/L	40	37.8	94	85-115	
Manganese, Dissolved	ug/L	40	40.2	100	85-115	
Nickel, Dissolved	ug/L	40	39.9	100	85-115	
Selenium, Dissolved	ug/L	40	39.6	99	85-115	

MATRIX SPIKE SAMPLE: 1243424

Parameter	Units	60151227001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	0.20J	1000	1010	101	70-130	
Cadmium, Dissolved	ug/L	19.5	1000	1020	100	70-130	
Chromium, Dissolved	ug/L	0.25J	1000	1000	100	70-130	
Cobalt, Dissolved	ug/L	2.7	1000	984	98	70-130	
Copper, Dissolved	ug/L	14.8	1000	986	97	70-130	
Lead, Dissolved	ug/L	0.063J	1000	952	95	70-130	
Manganese, Dissolved	ug/L	1870	1000	2870	100	70-130	
Nickel, Dissolved	ug/L	4.2	1000	991	99	70-130	
Selenium, Dissolved	ug/L	ND	1000	986	99	70-130	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60151227

SAMPLE DUPLICATE: 1243423

Parameter	Units	60151227001 Result	Dup Result	RPD	Max RPD	Qualifiers
Arsenic, Dissolved	ug/L	0.20J	0.20J		20	
Cadmium, Dissolved	ug/L	19.5	19.4	0	20	
Chromium, Dissolved	ug/L	0.25J	0.23J		20	
Cobalt, Dissolved	ug/L	2.7	2.8	0	20	
Copper, Dissolved	ug/L	14.8	14.7	1	20	
Lead, Dissolved	ug/L	0.063J	0.050J		20	
Manganese, Dissolved	ug/L	1870	1860	1	20	
Nickel, Dissolved	ug/L	4.2	4.1	1	20	
Selenium, Dissolved	ug/L	ND	ND		20	

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60151227

QC Batch: WET/42957

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60151227001

METHOD BLANK: 1238538

Matrix: Water

Associated Lab Samples: 60151227001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	08/20/13 09:07	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	08/20/13 09:07	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	08/20/13 09:07	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	08/20/13 09:07	

LABORATORY CONTROL SAMPLE: 1238539

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	509	102	90-110	

SAMPLE DUPLICATE: 1238542

Parameter	Units	60151047007 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	332	366	10	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	332	366	10	10	

SAMPLE DUPLICATE: 1238544

Parameter	Units	60151268002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	684	694	1	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	684	694	1	10	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60151227

QC Batch:	WETA/25865	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
Associated Lab Samples:	60151227001		

METHOD BLANK: 1238685 Matrix: Water

Associated Lab Samples: 60151227001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	08/20/13 09:02	
Chloride	mg/L	ND	1.0	08/20/13 09:02	
Fluoride	mg/L	ND	0.20	08/20/13 09:02	
Sulfate	mg/L	ND	1.0	08/20/13 09:02	

LABORATORY CONTROL SAMPLE: 1238686

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.1	101	90-110	
Chloride	mg/L	5	4.9	98	90-110	
Fluoride	mg/L	2.5	2.5	101	90-110	
Sulfate	mg/L	5	4.8	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1238687 1238688

Parameter	Units	60150708001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	ND	5	5	3.7	4.8	74	97	75-119	26	10	M1, R1
Chloride	mg/L	1.1	5	5	4.2	5.3	62	84	64-118	23	12	M1, R1
Fluoride	mg/L	0.37	2.5	2.5	2.3	2.9	76	103	75-110	26	10	R1
Sulfate	mg/L	92.0	50	50	142	143	101	103	61-119	1	10	

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QUALIFIERS

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60151227

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

R1 RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 2013 517 INJECTION TREATABILIT

Pace Project No.: 60151227

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60151227001	DR3A1308151025	EPA 200.7	MPRP/23901	EPA 200.7	ICP/18707
60151227001	DR3A1308151025	EPA 200.7	MPRP/24010	EPA 200.7	ICP/18778
60151227001	DR3A1308151025	EPA 200.8	MPRP/23900	EPA 200.8	ICPM/2459
60151227001	DR3A1308151025	EPA 200.8	MPRP/24009	EPA 200.8	ICPM/2477
60151227001	DR3A1308151025	EPA 245.1	MERP/7614	EPA 245.1	MERC/7570
60151227001	DR3A1308151025	EPA 245.1	MERP/7627	EPA 245.1	MERC/7582
60151227001	DR3A1308151025	SM 2320B	WET/42957		
60151227001	DR3A1308151025	EPA 300.0	WETA/25865		

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Sample Condition Upon Receipt
ESI Tech Spec Client

WO#: 60151227



Client Name: BP Amec

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 12733 W874961 0177 Pace Shipping Label Used? Yes ☐ No ☒

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☒ Bubble Bags ☐ Foam ☐ None ☐ Other ☐

Thermometer Used: T-112 / T-194 Type of Ice: Wet Blue ☐ None ☐ Samples received on ice, cooling process has begun.

Cooler Temperature: 1.1

Temperature should be above freezing to 6°C

Date and initials of person examining contents: Jim 8/16/13 154

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Filtered volume received for dissolved tests?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Includes date/time/ID/analyses Matrix: <u>water</u>		15.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	16.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	17.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed <u>Jim</u> Lot # of added preservative
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	18.
Pace Trip Blank lot # (if purchased): <u>NA</u>		19.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	20.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	21. List State:

Client Notification/ Resolution:

Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Jim

Date: 8/19/13

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps

Start: <u>1535</u>	Start:
End: <u>1540</u>	End:
Temp:	Temp:

Laboratory Management Program LAMP Chain of Custody Record

Page 1 of 1

BP/ARC Project Name: Rico-Argentine Mine Site

Req Due Date (mm/dd/yy): _____

Rush TAT: Yes X No _____

BP/ARC Facility No: _____

Lab Work Order Number: 10151227

Lab Name: Pace Analytical Laboratories, Inc.				BP/ARC Facility Address: Rico-Argentine Mine				Consultant/Contractor: AMEC E&I, Inc.														
Lab Address: 9608 Loiret Blvd., Lenexa, KS 66219				City, State, ZIP Code: Rico, Colorado				Consultant/Contractor Project No: SA11161313.300H														
Lab PM: Heather Wilson				Lead Regulatory Agency: U.S. EPA Region 8				Address: 10670 White Rock Road, Suite 100, Rancho Cordova, CA														
Lab Phone: (913) 563-1407				California Global ID No.: NA				Consultant/Contractor PM: Marc Lombardi														
Lab Shipping Acct: UPS # 733W87				Enfos Proposal No: D009D-0057 WR 268175				Phone: 916-636-3200														
Lab Bottle Order No: NA				Accounting Mode: Provision <u>X</u> OOC-BU _____ OOC-RM _____				Email Report/EDD To: lynda.lombardi@amec.com														
Other Info: 2013 517 Injection Treatability Study				Stage: 4-Execute Activity: Spend				Invoice To: BP/ARC <u>X</u> Contractor _____														
BP/ARC EBM: Anthony Brown				Matrix		No. Containers / Preservative		Requested Analyses				Report Type & QC Level										
EBM Phone: 714-228-6770												Standard <u>X</u>										
EBM Email: anthony.brown@bp.com												Full Data Package _____										
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Methanol	Tot Metals-see notes (E200.7/200.8/E245.1)	Dis Metals-see notes (E200.7/200.8/E245.1)	Alkalinity-Total HCO ₃ /CO ₃ /OH (SM2320B)	Bromide (E300.0)	Chloride (E300.0)	Fluoride (E300.0)	Sulfate (E300.0)	<p>Comments</p> <p>Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.</p>		
	PR3A1308151025	8/15/13	10:25	X			3	1	0	2	0	0		X	X	X	X	X	X		X	<p>Dissolved metals samples are field filtered.</p> <p>(BP3A) (BP3B) (BP3C) 61</p> <p>Metals are: Al, Ca, Fe, K, Li, Na, Mg, Si, Zn (E200.7); As, Cd, Co, Cr, Cu, Mn, Ni, Pb, Se (E200.8); and Hg (E245.1)</p> <p>RUSH 5-day TAT</p>
Sampler's Name: <u>M. Capener</u>				Relinquished By / Affiliation: <u>M. Capener</u>				Date: <u>8/19/13</u>	Time: <u>1400</u>	Accepted By / Affiliation: <u>[Signature]</u>				Date: <u>8/16/13</u>	Time: <u>1005</u>							
Sampler's Company: <u>AMEC</u>																						
Shipment Method: <u>UPS</u>				Ship Date: <u>8/15/13</u>																		
Shipment Tracking No: <u>12733WB78449810177</u>																						
Special Instructions:																						
THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No														Temp Blank: Yes / No		Cooler Temp on Receipt: <u>1.1</u> °F/C		Trip Blank: Yes / No		MS/MSD Sample Submitted: Yes / No		

September 06, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: Rico-Argentine Mine Site
Pace Project No.: 60151360

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on August 20, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Rico-Argentine Mine Site

Pace Project No.: 60151360

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

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SAMPLE SUMMARY

Project: Rico-Argentine Mine Site

Pace Project No.: 60151360

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60151360001	DR3A1308191010	Water	08/19/13 10:10	08/20/13 10:20

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SAMPLE ANALYTE COUNT

Project: Rico-Argentine Mine Site

Pace Project No.: 60151360

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60151360001	DR3A1308191010	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	TJT	1
		EPA 245.1	TJT	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60151360

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: September 06, 2013

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23918

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60151053002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1239268)
- Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60151360

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: September 06, 2013

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60151360

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: September 06, 2013

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23919

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60151053001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1239276)
 - Manganese
- MSD (Lab ID: 1239277)
 - Manganese

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60151360

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: September 06, 2013

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23922

B: Analyte was detected in the associated method blank.

- BLANK for HBN 303572 [MPRP/239 (Lab ID: 1239292)]
- Lead, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60151360

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: September 06, 2013

General Information:

1 sample was analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60151360

Method: EPA 245.1

Description: 245.1 Mercury, Dissolved

Client: BP AMEC

Date: September 06, 2013

General Information:

1 sample was analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60151360

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: September 06, 2013

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60151360

Method: EPA 300.0
Description: 300.0 IC Anions 28 Days
Client: BP AMEC
Date: September 06, 2013

General Information:

1 sample was analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: WETA/25892

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60151149001,60151155003

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1240005)
- Fluoride

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60151360

Sample: DR3A1308191010 Lab ID: 60151360001 Collected: 08/19/13 10:10 Received: 08/20/13 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	834	ug/L	75.0	16.6	1	08/21/13 10:00	08/23/13 15:25	7429-90-5	
Calcium	252000	ug/L	100	10.4	1	08/21/13 10:00	08/23/13 15:25	7440-70-2	
Iron	7730	ug/L	50.0	11.6	1	08/21/13 10:00	08/23/13 15:25	7439-89-6	
Lithium	23.6	ug/L	10.0	2.4	1	08/21/13 10:00	08/23/13 15:25	7439-93-2	
Magnesium	20400	ug/L	50.0	6.5	1	08/21/13 10:00	08/23/13 15:25	7439-95-4	
Potassium	3400	ug/L	500	44.4	1	08/21/13 10:00	08/23/13 15:25	7440-09-7	
Silicon	8720	ug/L	500	23.9	1	08/21/13 10:00	08/23/13 15:25	7440-21-3	
Sodium	15700	ug/L	500	21.7	1	08/21/13 10:00	08/23/13 15:25	7440-23-5	
Zinc	4080	ug/L	50.0	3.3	1	08/21/13 10:00	08/23/13 15:25	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	98.4	ug/L	75.0	16.6	1	08/21/13 10:30	08/23/13 15:53	7429-90-5	
Calcium, Dissolved	244000	ug/L	100	10.4	1	08/21/13 10:30	08/23/13 15:53	7440-70-2	
Iron, Dissolved	937	ug/L	50.0	11.6	1	08/21/13 10:30	08/23/13 15:53	7439-89-6	
Lithium, Dissolved	23.0	ug/L	10.0	2.4	1	08/21/13 10:30	08/23/13 15:53	7439-93-2	
Magnesium, Dissolved	20000	ug/L	50.0	6.5	1	08/21/13 10:30	08/23/13 15:53	7439-95-4	
Potassium, Dissolved	3300	ug/L	500	44.4	1	08/21/13 10:30	08/23/13 15:53	7440-09-7	
Silicon, Dissolved	7730	ug/L	500	23.9	1	08/21/13 10:30	08/23/13 15:53	7440-21-3	
Sodium, Dissolved	15400	ug/L	500	21.7	1	08/21/13 10:30	08/23/13 15:53	7440-23-5	
Zinc, Dissolved	3720	ug/L	50.0	3.3	1	08/21/13 10:30	08/23/13 15:53	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.3	ug/L	1.0	0.050	1	08/21/13 10:00	08/28/13 20:00	7440-38-2	
Cadmium	21.2	ug/L	0.50	0.050	1	08/21/13 10:00	08/28/13 20:00	7440-43-9	
Chromium	0.52J	ug/L	1.0	0.070	1	08/21/13 10:00	08/28/13 20:00	7440-47-3	
Cobalt	2.5	ug/L	1.0	0.080	1	08/21/13 10:00	08/28/13 20:00	7440-48-4	
Copper	160	ug/L	1.0	0.12	1	08/21/13 10:00	08/28/13 20:00	7440-50-8	
Lead	48.3	ug/L	1.0	0.030	1	08/21/13 10:00	08/28/13 20:00	7439-92-1	
Manganese	1820	ug/L	1.0	0.14	1	08/21/13 10:00	08/30/13 20:07	7439-96-5	
Nickel	4.8	ug/L	1.0	0.070	1	08/21/13 10:00	08/28/13 20:00	7440-02-0	
Selenium	0.28J	ug/L	1.0	0.14	1	08/21/13 10:00	08/28/13 20:00	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	ND	ug/L	1.0	0.050	1	08/21/13 10:30	08/21/13 17:18	7440-38-2	
Cadmium, Dissolved	19.7	ug/L	0.50	0.050	1	08/21/13 10:30	08/21/13 17:18	7440-43-9	
Chromium, Dissolved	ND	ug/L	1.0	0.070	1	08/21/13 10:30	08/21/13 17:18	7440-47-3	
Cobalt, Dissolved	3.6	ug/L	1.0	0.080	1	08/21/13 10:30	08/21/13 17:18	7440-48-4	D9
Copper, Dissolved	13.4	ug/L	1.0	0.12	1	08/21/13 10:30	08/21/13 17:18	7440-50-8	
Lead, Dissolved	0.071J	ug/L	1.0	0.030	1	08/21/13 10:30	08/21/13 17:18	7439-92-1	B
Manganese, Dissolved	1840	ug/L	1.0	0.14	1	08/21/13 10:30	08/21/13 17:18	7439-96-5	D9
Nickel, Dissolved	4.4	ug/L	1.0	0.070	1	08/21/13 10:30	08/21/13 17:18	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	08/21/13 10:30	08/21/13 17:18	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	08/21/13 12:15	08/22/13 10:06	7439-97-6	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60151360

Sample: DR3A1308191010		Lab ID: 60151360001		Collected: 08/19/13 10:10		Received: 08/20/13 10:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	08/21/13 16:40	08/22/13 11:20	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	148	mg/L	20.0	4.9	1		08/21/13 12:36		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	4.9	1		08/21/13 12:36		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	4.9	1		08/21/13 12:36		
Alkalinity, Total as CaCO ₃	148	mg/L	20.0	4.9	1		08/21/13 12:36		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.090	1		08/22/13 14:57	24959-67-9	
Chloride	0.91J	mg/L	1.0	0.50	1		08/22/13 14:57	16887-00-6	
Fluoride	2.3	mg/L	0.20	0.047	1		08/22/13 14:57	16984-48-8	
Sulfate	766	mg/L	50.0	8.0	50		08/22/13 15:12	14808-79-8	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60151360

QC Batch: MERP/7625 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60151360001

METHOD BLANK: 1239396 Matrix: Water
Associated Lab Samples: 60151360001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	08/22/13 09:37	

LABORATORY CONTROL SAMPLE: 1239397

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.5	89	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1239398 1239399

Parameter	Units	60151360001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.5	4.3	90	87	70-130	4	20	

MATRIX SPIKE SAMPLE: 1239400

Parameter	Units	60151362001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	ND	5	4.2	85	70-130	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60151360

QC Batch: MERP/7627

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury - Dissolved

Associated Lab Samples: 60151360001

METHOD BLANK: 1239855

Matrix: Water

Associated Lab Samples: 60151360001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	08/22/13 10:57	

LABORATORY CONTROL SAMPLE: 1239856

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	4.4	87	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1239857 1239858

Parameter	Units	60151227001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury, Dissolved	ug/L	ND	5	5	3.9	4.0	77	79	70-130	2	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60151360

QC Batch: MPRP/23918 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60151360001

METHOD BLANK: 1239266 Matrix: Water
Associated Lab Samples: 60151360001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	08/23/13 15:00	
Calcium	ug/L	ND	100	08/23/13 15:00	
Iron	ug/L	ND	50.0	08/23/13 15:00	
Lithium	ug/L	ND	10.0	08/23/13 15:00	
Magnesium	ug/L	ND	50.0	08/23/13 15:00	
Potassium	ug/L	ND	500	08/23/13 15:00	
Silicon	ug/L	ND	500	08/23/13 15:00	
Sodium	ug/L	ND	500	08/23/13 15:00	
Zinc	ug/L	ND	50.0	08/23/13 15:00	

LABORATORY CONTROL SAMPLE: 1239267

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	10700	107	85-115	
Calcium	ug/L	10000	10400	104	85-115	
Iron	ug/L	10000	10500	105	85-115	
Lithium	ug/L	1000	1040	104	85-115	
Magnesium	ug/L	10000	10300	103	85-115	
Potassium	ug/L	10000	10700	107	85-115	
Silicon	ug/L	5000	5240	105	85-115	
Sodium	ug/L	10000	10600	106	85-115	
Zinc	ug/L	1000	1030	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1239268 1239269

Parameter	Units	60151053002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	59.0J	10000	10000	10700	10600	106	106	70-130	1	8	
Calcium	ug/L	252000	10000	10000	267000	260000	151	75	70-130	3	9 M1	
Iron	ug/L	94.3	10000	10000	10200	10200	102	101	70-130	1	10	
Lithium	ug/L	26.2	1000	1000	1080	1060	105	104	70-130	1	20	
Magnesium	ug/L	20900	10000	10000	31700	31300	108	104	70-130	1	9	
Potassium	ug/L	3740	10000	10000	14600	14400	108	106	70-130	1	7	
Silicon	ug/L	7250	5000	5000	12600	12300	108	101	70-130	3	5	
Sodium	ug/L	17200	10000	10000	28100	27500	110	103	70-130	2	8	
Zinc	ug/L	910	1000	1000	1950	1940	104	103	70-130	0	11	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60151360

QC Batch: MPRP/23921 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Dissolved
Associated Lab Samples: 60151360001

METHOD BLANK: 1239288 Matrix: Water
Associated Lab Samples: 60151360001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	08/23/13 15:37	
Calcium, Dissolved	ug/L	ND	100	08/23/13 15:37	
Iron, Dissolved	ug/L	ND	50.0	08/23/13 15:37	
Lithium, Dissolved	ug/L	ND	10.0	08/23/13 15:37	
Magnesium, Dissolved	ug/L	ND	50.0	08/23/13 15:37	
Potassium, Dissolved	ug/L	ND	500	08/23/13 15:37	
Silicon, Dissolved	ug/L	ND	500	08/23/13 15:37	
Sodium, Dissolved	ug/L	ND	500	08/23/13 15:37	
Zinc, Dissolved	ug/L	ND	50.0	08/23/13 15:37	

LABORATORY CONTROL SAMPLE: 1239289

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	10300	103	85-115	
Calcium, Dissolved	ug/L	10000	10000	100	85-115	
Iron, Dissolved	ug/L	10000	9990	100	85-115	
Lithium, Dissolved	ug/L	1000	993	99	85-115	
Magnesium, Dissolved	ug/L	10000	10100	101	85-115	
Potassium, Dissolved	ug/L	10000	10200	102	85-115	
Silicon, Dissolved	ug/L	5000	5010	100	85-115	
Sodium, Dissolved	ug/L	10000	10200	102	85-115	
Zinc, Dissolved	ug/L	1000	1020	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1239290 1239291

Parameter	Units	60151104001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	ND	10000	10000	10300	10200	103	102	70-130	1	8	
Calcium, Dissolved	ug/L	19800	10000	10000	29500	28800	97	90	70-130	2	9	
Iron, Dissolved	ug/L	ND	10000	10000	10000	9880	100	99	70-130	1	10	
Lithium, Dissolved	ug/L	40.0	1000	1000	1050	1040	101	100	70-130	1	20	
Magnesium, Dissolved	ug/L	20400	10000	10000	30000	29500	96	91	70-130	2	9	
Potassium, Dissolved	ug/L	8060	10000	10000	18300	17900	102	99	70-130	2	7	
Silicon, Dissolved	ug/L	7380	5000	5000	12300	12000	99	93	70-130	3	5	
Sodium, Dissolved	ug/L	52100	10000	10000	61700	60300	96	82	70-130	2	8	
Zinc, Dissolved	ug/L	ND	1000	1000	1030	1020	102	102	70-130	1	11	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60151360

QC Batch: MPRP/23919 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60151360001

METHOD BLANK: 1239274 Matrix: Water
Associated Lab Samples: 60151360001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	08/28/13 19:43	
Cadmium	ug/L	ND	0.50	08/28/13 19:43	
Chromium	ug/L	ND	1.0	08/28/13 19:43	
Cobalt	ug/L	ND	1.0	08/28/13 19:43	
Copper	ug/L	0.31J	1.0	08/28/13 19:43	
Lead	ug/L	0.30J	1.0	08/28/13 19:43	
Manganese	ug/L	0.45J	1.0	08/30/13 19:39	
Nickel	ug/L	0.42J	1.0	08/28/13 19:43	
Selenium	ug/L	ND	1.0	08/28/13 19:43	

LABORATORY CONTROL SAMPLE: 1239275

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	41.2	103	85-115	
Cadmium	ug/L	40	40.2	100	85-115	
Chromium	ug/L	40	41.0	103	85-115	
Cobalt	ug/L	40	40.1	100	85-115	
Copper	ug/L	40	40.5	101	85-115	
Lead	ug/L	40	39.4	99	85-115	
Manganese	ug/L	40	40.6	102	85-115	
Nickel	ug/L	40	40.8	102	85-115	
Selenium	ug/L	40	41.6	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1239276 1239277

Parameter	Units	60151053001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	0.24J	40	40	42.3	41.2	105	103	70-130	2	20	
Cadmium	ug/L	14.2	40	40	53.0	51.7	97	94	70-130	3	20	
Chromium	ug/L	0.18J	40	40	38.9	38.1	97	95	70-130	2	20	
Cobalt	ug/L	2.2	40	40	39.8	38.7	94	91	70-130	3	20	
Copper	ug/L	26.7	40	40	61.8	59.6	88	82	70-130	4	20	
Lead	ug/L	2.5	40	40	41.7	40.3	98	94	70-130	3	20	
Manganese	ug/L	1640	40	40	1820	1830	442	470	70-130	1	20 M1	
Nickel	ug/L	3.8	40	40	40.4	39.5	92	89	70-130	2	20	
Selenium	ug/L	ND	40	40	42.8	42.3	107	106	70-130	1	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60151360

QC Batch: MPRP/23922 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60151360001

METHOD BLANK: 1239292 Matrix: Water
Associated Lab Samples: 60151360001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	08/21/13 17:06	
Cadmium, Dissolved	ug/L	ND	0.50	08/21/13 17:06	
Chromium, Dissolved	ug/L	ND	1.0	08/21/13 17:06	
Cobalt, Dissolved	ug/L	ND	1.0	08/21/13 17:06	
Copper, Dissolved	ug/L	ND	1.0	08/21/13 17:06	
Lead, Dissolved	ug/L	0.032J	1.0	08/21/13 17:06	
Manganese, Dissolved	ug/L	0.58J	1.0	08/21/13 17:06	
Nickel, Dissolved	ug/L	ND	1.0	08/21/13 17:06	
Selenium, Dissolved	ug/L	ND	1.0	08/21/13 17:06	

LABORATORY CONTROL SAMPLE: 1239293

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	38.0	95	85-115	
Cadmium, Dissolved	ug/L	40	39.7	99	85-115	
Chromium, Dissolved	ug/L	40	39.1	98	85-115	
Cobalt, Dissolved	ug/L	40	38.1	95	85-115	
Copper, Dissolved	ug/L	40	38.0	95	85-115	
Lead, Dissolved	ug/L	40	39.4	98	85-115	
Manganese, Dissolved	ug/L	40	40.4	101	85-115	
Nickel, Dissolved	ug/L	40	38.0	95	85-115	
Selenium, Dissolved	ug/L	40	38.0	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1239294 1239295

Parameter	Units	60151104001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	ND	40	40	38.8	39.0	97	97	70-130	1	20	
Cadmium, Dissolved	ug/L	ND	40	40	39.3	40.4	98	101	70-130	3	20	
Chromium, Dissolved	ug/L	2.3	40	40	40.7	40.8	96	96	70-130	0	20	
Cobalt, Dissolved	ug/L	ND	40	40	37.3	37.5	93	94	70-130	0	20	
Copper, Dissolved	ug/L	2.3	40	40	39.1	39.2	92	92	70-130	0	20	
Lead, Dissolved	ug/L	ND	40	40	39.2	39.7	98	99	70-130	1	20	
Manganese, Dissolved	ug/L	1.2	40	40	41.1	40.8	100	99	70-130	1	20	
Nickel, Dissolved	ug/L	ND	40	40	37.5	37.0	93	92	70-130	1	20	
Selenium, Dissolved	ug/L	ND	40	40	39.2	39.3	98	98	70-130	0	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60151360

QC Batch: WET/42977

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60151360001

METHOD BLANK: 1239121

Matrix: Water

Associated Lab Samples: 60151360001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	08/21/13 12:10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	08/21/13 12:10	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	08/21/13 12:10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	08/21/13 12:10	

LABORATORY CONTROL SAMPLE: 1239122

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	483	97	90-110	

SAMPLE DUPLICATE: 1239126

Parameter	Units	60151049005 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	386	380	2	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	386	380	2	10	

SAMPLE DUPLICATE: 1239127

Parameter	Units	60151306004 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	235	243	3	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	235	243	3	10	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60151360

QC Batch: WETA/25892 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60151360001

METHOD BLANK: 1240002 Matrix: Water
Associated Lab Samples: 60151360001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	08/22/13 08:57	
Chloride	mg/L	ND	1.0	08/22/13 08:57	
Fluoride	mg/L	ND	0.20	08/22/13 08:57	
Sulfate	mg/L	ND	1.0	08/22/13 08:57	

LABORATORY CONTROL SAMPLE: 1240003

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.8	97	90-110	
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	2.5	2.5	99	90-110	
Sulfate	mg/L	5	5.0	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1240004 1240005

Parameter	Units	60151149001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Bromide	mg/L	ND	5	5	5.4	5.2	109	104	75-119	5	10
Chloride	mg/L	1.7	5	5	6.4	6.6	95	98	64-118	2	12
Fluoride	mg/L	1.1	2.5	2.5	3.5	3.9	99	114	75-110	10	M1
Sulfate	mg/L	1630	1000	1000	2460	2460	84	83	61-119	0	10

MATRIX SPIKE SAMPLE: 1240006

Parameter	Units	60151155003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	25	24.1	96	75-119	
Chloride	mg/L	27.5	25	50.4	92	64-118	
Fluoride	mg/L	ND	12.5	12.3	92	75-110	
Sulfate	mg/L	25.9	25	51.4	102	61-119	

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Rico-Argentine Mine Site
Pace Project No.: 60151360

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rico-Argentine Mine Site

Pace Project No.: 60151360

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60151360001	DR3A1308191010	EPA 200.7	MPRP/23918	EPA 200.7	ICP/18723
60151360001	DR3A1308191010	EPA 200.7	MPRP/23921	EPA 200.7	ICP/18721
60151360001	DR3A1308191010	EPA 200.8	MPRP/23919	EPA 200.8	ICPM/2463
60151360001	DR3A1308191010	EPA 200.8	MPRP/23922	EPA 200.8	ICPM/2462
60151360001	DR3A1308191010	EPA 245.1	MERP/7625	EPA 245.1	MERC/7580
60151360001	DR3A1308191010	EPA 245.1	MERP/7627	EPA 245.1	MERC/7582
60151360001	DR3A1308191010	SM 2320B	WET/42977		
60151360001	DR3A1308191010	EPA 300.0	WETA/25892		

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Sample Condition Upon Receipt
ESI Tech Spec Client

WO#: 60151360



60151360

Client Name:

AmEC Amw
BP Anderson Eng. 8/20/13

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 12 733 18784 4967 4155 Pace Shipping Label Used? Yes ☐ No ☒

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☒ ZPLC

Thermometer Used: T-112 / T-194

Type of Ice: Wet Blue None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature:

2.3

Date and initials of person examining
contents: 8-20-13 BA

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Filtered volume received for dissolved tests?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Includes date/time/ID/analyses	Matrix: WT	15.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	16.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	17.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:

Client Notification/ Resolution:

Copy COC to Client? Y / ☒ N

Field Data Required? Y / N

Person Contacted:

Date/Time:

Comments/ Resolution:

Temp Log: Record start and finish times
when unpacking cooler, if >20 min,
recheck sample temps

Start: 1135 Start:

End: 1140 End:

Temp: Temp:

Project Manager Review:

Amw

Date:

8/20/13



Laboratory Management Program LAMP Chain of Custody Record

Page 1 of 1BP/ARC Project Name: Rico-Argentine Mine SiteReq Due Date (mm/dd/yy): _____ Rush TAT: Yes X No _____

BP/ARC Facility No: _____

Lab Work Order Number: _____

Lab Name: Pace Analytical Laboratories, Inc.				BP/ARC Facility Address: Rico-Argentine Mine				Consultant/Contractor: AMEC E&I, Inc.														
Lab Address: 9608 Loiret Blvd., Lenexa, KS 66219				City, State, ZIP Code: Rico, Colorado				Consultant/Contractor Project No: SA11161313.300H														
Lab PM: Heather Wilson				Lead Regulatory Agency: U.S. EPA Region 8				Address: 10670 White Rock Road, Suite 100, Rancho Cordova, CA														
Lab Phone: (913) 563-1407				California Global ID No.: NA				Consultant/Contractor PM: Marc Lombardi														
Lab Shipping Acct: UPS # 733W87				Enfos Proposal No: D009D-0057 WR 268175				Phone: 916-636-3200														
Lab Bottle Order No: NA				Accounting Mode: Provision <u>X</u> OOC-BU _____ OOC-RM _____				Email Report/EDD To: lynda.lombardi@amec.com														
Other Info: 2013 517 Injection Treatability Study				Stage: 4-Execute Activity: Spend				Invoice To: BP/ARC <u>X</u> Contractor _____														
BP/ARC EBM: Anthony Brown				Matrix		No. Containers / Preservative		Requested Analyses				Report Type & QC Level										
EBM Phone: 714-228-6770												Standard <u>X</u>										
EBM Email: anthony.brown@bp.com												Full Data Package _____										
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Methanol	Tot Metals-see notes (E200.7/200.8/E245.1)	Dis Metals-see notes (E200.7/200.8/E245.1)	Alkalinity-Total, HCO ₃ , CO ₃ , OH (SM2320B)	Bromide (E300.0)	Chloride (E300.0)	Fluoride (E300.0)	Sulfate (E300.0)	Comments		
	PR3A1308F1101D 1B24	8/19/13	10:10	X	X	X	3	1	0	2	0	0		X	X	X	X	X	X	X	201	
<div>MC 8/19/13</div> <div>RUSH 5-day TAT</div>																					Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.	
																					Dissolved metals samples are field filtered.	
																					Metals are: Al, Ca, Fe, K, Li, Na, Mg, Si,	
																					Zn (E200.7); As, Cd, Co, Cr, Cu, Mn, Ni,	
																					Pb, Se (E200.8); and Hg (E245.1)	
Sampler's Name: <u>M. Capener</u>				Relinquished By / Affiliation: <u>M. Capener / AMEC</u>				Date: <u>8/19/13</u>	Time: <u>10:10</u>	Accepted By / Affiliation: <u>M. Capener / AMEC</u>				Date: <u>8-20-13</u>	Time: <u>1020</u>							
Sampler's Company: <u>AMEC</u>																						
Shipment Method: <u>UPS</u>				Ship Date: <u>8/19/13</u>																		
Shipment Tracking No: <u>1Z 733W8704 4967 4155</u>																						
Special Instructions:																						
THIS LINE - LAB USE ONLY: Custody Seals In Place: <u>0</u> / No Temp Blank: <u>0</u> / No Cooler Temp on Receipt: <u>23</u> °F/C Trip Blank: Yes / <u>No</u> MS/MSD Sample Submitted: Yes / <u>No</u>																						

September 09, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: Rico-Argentine Mine Site
Pace Project No.: 60151681

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on August 23, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Rico-Argentine Mine Site

Pace Project No.: 60151681

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

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SAMPLE SUMMARY

Project: Rico-Argentine Mine Site

Pace Project No.: 60151681

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60151681001	BLAINEOBF130821	Water	08/21/13 10:50	08/23/13 10:30
60151681002	BLAINEIBF130821	Water	08/21/13 14:20	08/23/13 10:30
60151681003	517SHAFT465130821	Water	08/21/13 12:45	08/23/13 10:30

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SAMPLE ANALYTE COUNT

Project: Rico-Argentine Mine Site

Pace Project No.: 60151681

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60151681001	BLAINEOBF130821	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	TJT	1
		EPA 245.1	TJT	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60151681002	BLAINEIBF130821	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	TJT	1
		EPA 245.1	TJT	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4
60151681003	517SHAFT465130821	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	TJT	1
		EPA 245.1	TJT	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60151681

Method: EPA 200.7
Description: 200.7 Metals, Total
Client: BP AMEC
Date: September 09, 2013

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23990

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60151681001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1242870)
 - Aluminum
 - Calcium
 - Iron
 - Magnesium
 - Silicon
 - Zinc
- MSD (Lab ID: 1242871)
 - Calcium
 - Iron
 - Magnesium
 - Zinc

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60151681

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: September 09, 2013

General Information:

3 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23991

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60151681001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1242879)
 - Aluminum, Dissolved
 - Calcium, Dissolved
 - Iron, Dissolved
 - Magnesium, Dissolved
 - Silicon, Dissolved
 - Zinc, Dissolved
- MSD (Lab ID: 1242880)
 - Aluminum, Dissolved
 - Iron, Dissolved
 - Magnesium, Dissolved
 - Zinc, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60151681

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: September 09, 2013

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23972

B: Analyte was detected in the associated method blank.

- BLANK for HBN 304216 [MPRP/239 (Lab ID: 1242337)]
- Chromium

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23972

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60151430001,60151563003

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1242341)
- Manganese

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60151681

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: September 09, 2013

General Information:

3 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/23992

B: Analyte was detected in the associated method blank.

- BLANK for HBN 304397 [MPRP/239 (Lab ID: 1242881)]
- Chromium, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/23992

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60151681002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1242883)
 - Copper, Dissolved
 - Manganese, Dissolved
- MSD (Lab ID: 1242884)
 - Cadmium, Dissolved
 - Copper, Dissolved
 - Manganese, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60151681

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: September 09, 2013

General Information:

3 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60151681

Method: EPA 245.1

Description: 245.1 Mercury, Dissolved

Client: BP AMEC

Date: September 09, 2013

General Information:

3 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60151681

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: September 09, 2013

General Information:

3 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60151681

Method: EPA 300.0
Description: 300.0 IC Anions 28 Days
Client: BP AMEC
Date: September 09, 2013

General Information:

3 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: WETA/25971

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60151144001,60151500005

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1243372)
- Sulfate

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60151681

Sample: BLAINEOBF130821 Lab ID: 60151681001 Collected: 08/21/13 10:50 Received: 08/23/13 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	227000	ug/L	225	49.8	3	08/27/13 10:30	08/29/13 10:44	7429-90-5	M1
Calcium	350000	ug/L	300	31.0	3	08/27/13 10:30	08/29/13 10:44	7440-70-2	M1
Iron	1420000	ug/L	150	34.8	3	08/27/13 10:30	08/29/13 10:44	7439-89-6	M1
Lithium	261	ug/L	30.0	7.3	3	08/27/13 10:30	08/29/13 10:44	7439-93-2	
Magnesium	201000	ug/L	250	32.4	5	08/27/13 10:30	08/29/13 11:33	7439-95-4	M1
Potassium	2010	ug/L	1500	133	3	08/27/13 10:30	08/29/13 10:44	7440-09-7	
Silicon	41300	ug/L	1500	71.8	3	08/27/13 10:30	08/29/13 10:44	7440-21-3	M1
Sodium	4490	ug/L	1500	65.0	3	08/27/13 10:30	08/29/13 10:44	7440-23-5	
Zinc	198000	ug/L	250	16.6	5	08/27/13 10:30	08/29/13 11:33	7440-66-6	M1
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	229000	ug/L	225	49.8	3	08/27/13 10:30	08/29/13 11:00	7429-90-5	D9,M1
Calcium, Dissolved	350000	ug/L	300	31.0	3	08/27/13 10:30	08/29/13 11:00	7440-70-2	M1
Iron, Dissolved	1420000	ug/L	150	34.8	3	08/27/13 10:30	08/29/13 11:00	7439-89-6	M1
Lithium, Dissolved	271	ug/L	30.0	7.3	3	08/27/13 10:30	08/29/13 11:00	7439-93-2	D9
Magnesium, Dissolved	197000	ug/L	250	32.4	5	08/27/13 10:30	08/29/13 11:49	7439-95-4	M1
Potassium, Dissolved	2020	ug/L	1500	133	3	08/27/13 10:30	08/29/13 11:00	7440-09-7	D9
Silicon, Dissolved	41000	ug/L	1500	71.8	3	08/27/13 10:30	08/29/13 11:00	7440-21-3	M1
Sodium, Dissolved	4550	ug/L	1500	65.0	3	08/27/13 10:30	08/29/13 11:00	7440-23-5	D9
Zinc, Dissolved	196000	ug/L	250	16.6	5	08/27/13 10:30	08/29/13 11:49	7440-66-6	M1
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	704	ug/L	100	5.0	100	08/26/13 10:15	09/04/13 14:12	7440-38-2	
Cadmium	1780	ug/L	50.0	5.0	100	08/26/13 10:15	09/04/13 14:12	7440-43-9	
Chromium	221	ug/L	100	7.0	100	08/26/13 10:15	09/04/13 14:12	7440-47-3	
Cobalt	258	ug/L	100	8.0	100	08/26/13 10:15	09/04/13 14:12	7440-48-4	
Copper	23700	ug/L	100	12.0	100	08/26/13 10:15	09/04/13 14:12	7440-50-8	
Lead	240	ug/L	100	3.0	100	08/26/13 10:15	09/04/13 14:12	7439-92-1	
Manganese	104000	ug/L	100	14.0	100	08/26/13 10:15	09/04/13 14:12	7439-96-5	
Nickel	402	ug/L	100	7.0	100	08/26/13 10:15	09/04/13 14:12	7440-02-0	
Selenium	37.0	ug/L	20.0	2.8	20	08/26/13 10:15	09/06/13 12:35	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	679	ug/L	50.0	2.5	50	08/27/13 10:30	09/04/13 18:46	7440-38-2	
Cadmium, Dissolved	1740	ug/L	25.0	2.5	50	08/27/13 10:30	09/04/13 18:46	7440-43-9	
Chromium, Dissolved	213	ug/L	50.0	3.5	50	08/27/13 10:30	09/04/13 18:46	7440-47-3	
Cobalt, Dissolved	239	ug/L	50.0	4.0	50	08/27/13 10:30	09/04/13 18:46	7440-48-4	
Copper, Dissolved	22600	ug/L	50.0	6.0	50	08/27/13 10:30	09/04/13 18:46	7440-50-8	
Lead, Dissolved	235	ug/L	50.0	1.5	50	08/27/13 10:30	09/04/13 18:46	7439-92-1	
Manganese, Dissolved	106000	ug/L	50.0	7.0	50	08/27/13 10:30	09/04/13 18:46	7439-96-5	D9
Nickel, Dissolved	371	ug/L	50.0	3.5	50	08/27/13 10:30	09/04/13 18:46	7440-02-0	
Selenium, Dissolved	33.7	ug/L	20.0	2.8	20	08/27/13 10:30	09/06/13 12:43	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	08/28/13 11:50	08/29/13 10:48	7439-97-6	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60151681

Sample: BLAINEOBF130821 Lab ID: 60151681001 Collected: 08/21/13 10:50 Received: 08/23/13 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	08/28/13 11:50	08/29/13 11:13	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	ND	mg/L	20.0	4.9	1		08/26/13 08:51		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	4.9	1		08/26/13 08:51		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	4.9	1		08/26/13 08:51		
Alkalinity, Total as CaCO ₃	ND	mg/L	20.0	4.9	1		08/26/13 08:51		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	ND	mg/L	1.0	0.090	1		08/29/13 19:17	24959-67-9	
Chloride	1.6	mg/L	1.0	0.50	1		08/29/13 19:17	16887-00-6	
Fluoride	59.5	mg/L	4.0	0.94	20		08/30/13 09:40	16984-48-8	
Sulfate	24400	mg/L	2000	320	2000		08/30/13 11:25	14808-79-8	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60151681

Sample: BLAINEIBF130821 Lab ID: 60151681002 Collected: 08/21/13 14:20 Received: 08/23/13 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	235000	ug/L	225	49.8	3	08/27/13 10:30	08/29/13 10:57	7429-90-5	
Calcium	357000	ug/L	300	31.0	3	08/27/13 10:30	08/29/13 10:57	7440-70-2	
Iron	1260000	ug/L	150	34.8	3	08/27/13 10:30	08/29/13 10:57	7439-89-6	
Lithium	271	ug/L	30.0	7.3	3	08/27/13 10:30	08/29/13 10:57	7439-93-2	
Magnesium	200000	ug/L	250	32.4	5	08/27/13 10:30	08/29/13 11:46	7439-95-4	
Potassium	2620	ug/L	1500	133	3	08/27/13 10:30	08/29/13 10:57	7440-09-7	
Silicon	41400	ug/L	1500	71.8	3	08/27/13 10:30	08/29/13 10:57	7440-21-3	
Sodium	4120	ug/L	1500	65.0	3	08/27/13 10:30	08/29/13 10:57	7440-23-5	
Zinc	177000	ug/L	250	16.6	5	08/27/13 10:30	08/29/13 11:46	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	234000	ug/L	375	83.0	5	08/27/13 10:30	08/29/13 12:02	7429-90-5	
Calcium, Dissolved	358000	ug/L	500	51.8	5	08/27/13 10:30	08/29/13 12:02	7440-70-2	D9
Iron, Dissolved	1330000	ug/L	250	58.0	5	08/27/13 10:30	08/29/13 12:02	7439-89-6	D9
Lithium, Dissolved	265	ug/L	50.0	12.1	5	08/27/13 10:30	08/29/13 12:02	7439-93-2	
Magnesium, Dissolved	197000	ug/L	250	32.4	5	08/27/13 10:30	08/29/13 12:02	7439-95-4	
Potassium, Dissolved	2680	ug/L	2500	222	5	08/27/13 10:30	08/29/13 12:02	7440-09-7	D9
Silicon, Dissolved	40600	ug/L	2500	120	5	08/27/13 10:30	08/29/13 12:02	7440-21-3	
Sodium, Dissolved	4130	ug/L	2500	108	5	08/27/13 10:30	08/29/13 12:02	7440-23-5	D9
Zinc, Dissolved	174000	ug/L	250	16.6	5	08/27/13 10:30	08/29/13 12:02	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	41.7	ug/L	20.0	1.0	20	08/26/13 10:15	09/06/13 12:39	7440-38-2	
Cadmium	1570	ug/L	50.0	5.0	100	08/26/13 10:15	09/04/13 14:16	7440-43-9	
Chromium	227	ug/L	100	7.0	100	08/26/13 10:15	09/04/13 14:16	7440-47-3	
Cobalt	238	ug/L	100	8.0	100	08/26/13 10:15	09/04/13 14:16	7440-48-4	
Copper	23300	ug/L	100	12.0	100	08/26/13 10:15	09/04/13 14:16	7440-50-8	
Lead	168	ug/L	100	3.0	100	08/26/13 10:15	09/04/13 14:16	7439-92-1	
Manganese	102000	ug/L	100	14.0	100	08/26/13 10:15	09/04/13 14:16	7439-96-5	
Nickel	399	ug/L	100	7.0	100	08/26/13 10:15	09/04/13 14:16	7440-02-0	
Selenium	26.9	ug/L	20.0	2.8	20	08/26/13 10:15	09/06/13 12:39	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	40.8	ug/L	20.0	1.0	20	08/27/13 10:30	09/06/13 12:47	7440-38-2	
Cadmium, Dissolved	1490	ug/L	25.0	2.5	50	08/27/13 10:30	09/04/13 18:50	7440-43-9	M1
Chromium, Dissolved	207	ug/L	50.0	3.5	50	08/27/13 10:30	09/04/13 18:50	7440-47-3	
Cobalt, Dissolved	215	ug/L	50.0	4.0	50	08/27/13 10:30	09/04/13 18:50	7440-48-4	
Copper, Dissolved	21200	ug/L	50.0	6.0	50	08/27/13 10:30	09/04/13 18:50	7440-50-8	M1
Lead, Dissolved	163	ug/L	50.0	1.5	50	08/27/13 10:30	09/04/13 18:50	7439-92-1	
Manganese, Dissolved	98000	ug/L	50.0	7.0	50	08/27/13 10:30	09/04/13 18:50	7439-96-5	M1
Nickel, Dissolved	362	ug/L	50.0	3.5	50	08/27/13 10:30	09/04/13 18:50	7440-02-0	
Selenium, Dissolved	29.5	ug/L	20.0	2.8	20	08/27/13 10:30	09/06/13 12:47	7782-49-2	D9
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	08/28/13 11:50	08/29/13 10:51	7439-97-6	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60151681

Sample: BLAINEIBF130821 Lab ID: 60151681002 Collected: 08/21/13 14:20 Received: 08/23/13 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	08/28/13 11:50	08/29/13 11:15	7439-97-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Bicarbonate (CaCO ₃)	ND	mg/L	20.0	4.9	1		08/26/13 08:52		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	4.9	1		08/26/13 08:52		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	4.9	1		08/26/13 08:52		
Alkalinity, Total as CaCO ₃	ND	mg/L	20.0	4.9	1		08/26/13 08:52		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	ND	mg/L	1.0	0.090	1		08/28/13 16:37	24959-67-9	
Chloride	1.4	mg/L	1.0	0.50	1		08/28/13 16:37	16887-00-6	
Fluoride	110	mg/L	10.0	2.4	50		08/28/13 16:53	16984-48-8	
Sulfate	11700	mg/L	2000	320	2000		08/28/13 09:49	14808-79-8	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60151681

Sample: 517SHAFT465130821 Lab ID: 60151681003 Collected: 08/21/13 12:45 Received: 08/23/13 10:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	185	ug/L	75.0	16.6	1	08/27/13 10:30	08/29/13 10:27	7429-90-5	
Calcium	172000	ug/L	100	10.4	1	08/27/13 10:30	08/29/13 10:27	7440-70-2	
Iron	4650	ug/L	50.0	11.6	1	08/27/13 10:30	08/29/13 10:27	7439-89-6	
Lithium	28.8	ug/L	10.0	2.4	1	08/27/13 10:30	08/29/13 10:27	7439-93-2	
Magnesium	15900	ug/L	50.0	6.5	1	08/27/13 10:30	08/29/13 10:27	7439-95-4	
Potassium	54900	ug/L	500	44.4	1	08/27/13 10:30	08/29/13 10:27	7440-09-7	
Silicon	4500	ug/L	500	23.9	1	08/27/13 10:30	08/29/13 10:27	7440-21-3	
Sodium	67100	ug/L	500	21.7	1	08/27/13 10:30	08/29/13 10:27	7440-23-5	
Zinc	1660	ug/L	50.0	3.3	1	08/27/13 10:30	08/29/13 10:27	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	53.3J	ug/L	75.0	16.6	1	08/27/13 10:30	08/29/13 10:30	7429-90-5	
Calcium, Dissolved	160000	ug/L	100	10.4	1	08/27/13 10:30	08/29/13 10:30	7440-70-2	
Iron, Dissolved	148	ug/L	50.0	11.6	1	08/27/13 10:30	08/29/13 10:30	7439-89-6	
Lithium, Dissolved	28.2	ug/L	10.0	2.4	1	08/27/13 10:30	08/29/13 10:30	7439-93-2	
Magnesium, Dissolved	15600	ug/L	50.0	6.5	1	08/27/13 10:30	08/29/13 10:30	7439-95-4	
Potassium, Dissolved	54900	ug/L	500	44.4	1	08/27/13 10:30	08/29/13 10:30	7440-09-7	
Silicon, Dissolved	4150	ug/L	500	23.9	1	08/27/13 10:30	08/29/13 10:30	7440-21-3	
Sodium, Dissolved	66900	ug/L	500	21.7	1	08/27/13 10:30	08/29/13 10:30	7440-23-5	
Zinc, Dissolved	1190	ug/L	50.0	3.3	1	08/27/13 10:30	08/29/13 10:30	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	3.1	ug/L	1.0	0.050	1	08/26/13 10:15	09/04/13 14:20	7440-38-2	
Cadmium	4.7	ug/L	0.50	0.050	1	08/26/13 10:15	09/04/13 14:20	7440-43-9	
Chromium	0.79J	ug/L	1.0	0.070	1	08/26/13 10:15	09/04/13 14:20	7440-47-3	B
Cobalt	2.4	ug/L	1.0	0.080	1	08/26/13 10:15	09/04/13 14:20	7440-48-4	
Copper	26.0	ug/L	1.0	0.12	1	08/26/13 10:15	09/04/13 14:20	7440-50-8	
Lead	61.9	ug/L	1.0	0.030	1	08/26/13 10:15	09/04/13 14:20	7439-92-1	
Manganese	2210	ug/L	1.0	0.14	1	08/26/13 10:15	09/04/13 14:20	7439-96-5	
Nickel	4.1	ug/L	1.0	0.070	1	08/26/13 10:15	09/04/13 14:20	7440-02-0	
Selenium	0.79J	ug/L	1.0	0.14	1	08/26/13 10:15	09/04/13 14:20	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	1.1	ug/L	1.0	0.050	1	08/27/13 10:30	09/04/13 19:02	7440-38-2	
Cadmium, Dissolved	3.1	ug/L	0.50	0.050	1	08/27/13 10:30	09/04/13 19:02	7440-43-9	
Chromium, Dissolved	0.20J	ug/L	1.0	0.070	1	08/27/13 10:30	09/04/13 19:02	7440-47-3	B
Cobalt, Dissolved	2.4	ug/L	1.0	0.080	1	08/27/13 10:30	09/04/13 19:02	7440-48-4	
Copper, Dissolved	5.8	ug/L	1.0	0.12	1	08/27/13 10:30	09/04/13 19:02	7440-50-8	
Lead, Dissolved	1.1	ug/L	1.0	0.030	1	08/27/13 10:30	09/04/13 19:02	7439-92-1	
Manganese, Dissolved	1600	ug/L	1.0	0.14	1	08/27/13 10:30	09/04/13 19:02	7439-96-5	
Nickel, Dissolved	3.6	ug/L	1.0	0.070	1	08/27/13 10:30	09/04/13 19:02	7440-02-0	
Selenium, Dissolved	0.46J	ug/L	1.0	0.14	1	08/27/13 10:30	09/04/13 19:02	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	08/28/13 11:50	08/29/13 10:53	7439-97-6	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60151681

Sample: 517SHAFT465130821		Lab ID: 60151681003		Collected: 08/21/13 12:45		Received: 08/23/13 10:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND ug/L		0.20	0.14	1	08/28/13 11:50	08/29/13 11:17	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	330 mg/L		20.0	4.9	1		08/26/13 08:58		
Alkalinity, Carbonate (CaCO ₃)	ND mg/L		20.0	4.9	1		08/26/13 08:58		
Alkalinity, Hydroxide (CaCO ₃)	ND mg/L		20.0	4.9	1		08/26/13 08:58		
Alkalinity, Total as CaCO ₃	330 mg/L		20.0	4.9	1		08/26/13 08:58		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND mg/L		1.0	0.090	1		08/30/13 10:41	24959-67-9	
Chloride	1.2 mg/L		1.0	0.50	1		08/30/13 10:41	16887-00-6	
Fluoride	1.3 mg/L		0.20	0.047	1		08/30/13 10:41	16984-48-8	
Sulfate	341 mg/L		50.0	8.0	50		08/29/13 21:41	14808-79-8	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60151681

QC Batch: MERP/7649 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60151681001, 60151681002, 60151681003

METHOD BLANK: 1243459 Matrix: Water

Associated Lab Samples: 60151681001, 60151681002, 60151681003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	08/29/13 10:44	

LABORATORY CONTROL SAMPLE: 1243460

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.7	93	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1243461 1243462

Parameter	Units	60151681003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.7	4.7	93	94	70-130	1	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60151681

QC Batch: MERP/7648 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury - Dissolved
Associated Lab Samples: 60151681001, 60151681002, 60151681003

METHOD BLANK: 1243454 Matrix: Water

Associated Lab Samples: 60151681001, 60151681002, 60151681003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	08/29/13 11:04	

LABORATORY CONTROL SAMPLE: 1243455

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	4.6	93	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1243456 1243457

Parameter	Units	60151681003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury, Dissolved	ug/L	ND	5	5	4.6	4.6	92	91	70-130	1	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60151681

QC Batch: MPRP/23990 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60151681001, 60151681002, 60151681003

METHOD BLANK: 1242868 Matrix: Water

Associated Lab Samples: 60151681001, 60151681002, 60151681003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	08/29/13 10:14	
Calcium	ug/L	ND	100	08/29/13 10:14	
Iron	ug/L	ND	50.0	08/29/13 10:14	
Lithium	ug/L	ND	10.0	08/29/13 10:14	
Magnesium	ug/L	6.6J	50.0	08/29/13 10:14	
Potassium	ug/L	53.8J	500	08/29/13 10:14	
Silicon	ug/L	ND	500	08/29/13 10:14	
Sodium	ug/L	ND	500	08/29/13 10:14	
Zinc	ug/L	ND	50.0	08/29/13 10:14	

LABORATORY CONTROL SAMPLE: 1242869

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	10100	101	85-115	
Calcium	ug/L	10000	10100	101	85-115	
Iron	ug/L	10000	10000	100	85-115	
Lithium	ug/L	1000	1030	103	85-115	
Magnesium	ug/L	10000	9530	95	85-115	
Potassium	ug/L	10000	10100	101	85-115	
Silicon	ug/L	5000	4960	99	85-115	
Sodium	ug/L	10000	10200	102	85-115	
Zinc	ug/L	1000	995	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1242870 1242871

Parameter	Units	60151681001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	227000	10000	10000	234000	238000	62	103	70-130	2	8	M1
Calcium	ug/L	350000	10000	10000	351000	357000	9	66	70-130	2	9	M1
Iron	ug/L	1420000	10000	10000	1420000	1450000	-48	225	70-130	2	10	M1
Lithium	ug/L	261	1000	1000	1180	1210	92	95	70-130	3	20	
Magnesium	ug/L	201000	10000	10000	204000	205000	28	36	70-130	0	9	M1
Potassium	ug/L	2010	10000	10000	10800	11200	88	91	70-130	3	7	
Silicon	ug/L	41300	5000	5000	44700	45700	68	87	70-130	2	5	M1
Sodium	ug/L	4490	10000	10000	13400	13700	89	92	70-130	2	8	
Zinc	ug/L	198000	1000	1000	195000	197000	-320	-190	70-130	1	11	M1

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60151681

QC Batch:	MPRP/23991	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Dissolved
Associated Lab Samples:	60151681001, 60151681002, 60151681003		

METHOD BLANK: 1242877 Matrix: Water

Associated Lab Samples: 60151681001, 60151681002, 60151681003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	08/29/13 10:17	
Calcium, Dissolved	ug/L	ND	100	08/29/13 10:17	
Iron, Dissolved	ug/L	ND	50.0	08/29/13 10:17	
Lithium, Dissolved	ug/L	ND	10.0	08/29/13 10:17	
Magnesium, Dissolved	ug/L	ND	50.0	08/29/13 10:17	
Potassium, Dissolved	ug/L	ND	500	08/29/13 10:17	
Silicon, Dissolved	ug/L	ND	500	08/29/13 10:17	
Sodium, Dissolved	ug/L	ND	500	08/29/13 10:17	
Zinc, Dissolved	ug/L	ND	50.0	08/29/13 10:17	

LABORATORY CONTROL SAMPLE: 1242878

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	10200	102	85-115	
Calcium, Dissolved	ug/L	10000	10100	101	85-115	
Iron, Dissolved	ug/L	10000	10200	102	85-115	
Lithium, Dissolved	ug/L	1000	1040	104	85-115	
Magnesium, Dissolved	ug/L	10000	9580	96	85-115	
Potassium, Dissolved	ug/L	10000	10200	102	85-115	
Silicon, Dissolved	ug/L	5000	5000	100	85-115	
Sodium, Dissolved	ug/L	10000	10300	103	85-115	
Zinc, Dissolved	ug/L	1000	1000	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1242879 1242880

Parameter	Units	60151681001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	229000	10000	10000	233000	242000	43	133	70-130	4	8	M1
Calcium, Dissolved	ug/L	350000	10000	10000	349000	362000	-15	117	70-130	4	9	M1
Iron, Dissolved	ug/L	142000	10000	10000	1380000	1450000	-339	369	70-130	5	10	M1
Lithium, Dissolved	ug/L	271	1000	1000	1210	1210	94	94	70-130	0	20	
Magnesium, Dissolved	ug/L	197000	10000	10000	198000	212000	8	152	70-130	7	9	M1
Potassium, Dissolved	ug/L	2020	10000	10000	11000	10900	90	89	70-130	1	7	
Silicon, Dissolved	ug/L	41000	5000	5000	44200	45800	64	95	70-130	4	5	M1
Sodium, Dissolved	ug/L	4550	10000	10000	13600	13600	90	91	70-130	0	8	
Zinc, Dissolved	ug/L	196000	1000	1000	191000	202000	-460	645	70-130	6	11	M1

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60151681

QC Batch: MPRP/23972 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60151681001, 60151681002, 60151681003

METHOD BLANK: 1242337 Matrix: Water

Associated Lab Samples: 60151681001, 60151681002, 60151681003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	09/04/13 13:51	
Cadmium	ug/L	ND	0.50	09/04/13 13:51	
Chromium	ug/L	0.098J	1.0	09/04/13 13:51	
Cobalt	ug/L	0.16J	1.0	09/04/13 13:51	
Copper	ug/L	0.15J	1.0	09/04/13 13:51	
Lead	ug/L	ND	1.0	09/04/13 13:51	
Manganese	ug/L	0.14J	1.0	09/04/13 13:51	
Nickel	ug/L	0.21J	1.0	09/04/13 13:51	
Selenium	ug/L	ND	1.0	09/04/13 13:51	

LABORATORY CONTROL SAMPLE: 1242338

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	40.0	100	85-115	
Cadmium	ug/L	40	40.5	101	85-115	
Chromium	ug/L	40	39.2	98	85-115	
Cobalt	ug/L	40	38.0	95	85-115	
Copper	ug/L	40	39.0	97	85-115	
Lead	ug/L	40	38.2	96	85-115	
Manganese	ug/L	40	39.9	100	85-115	
Nickel	ug/L	40	38.1	95	85-115	
Selenium	ug/L	40	40.7	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1242339 1242340

Parameter	Units	60151430001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	2.1	40	40	41.0	41.9	97	100	70-130	2	20	
Cadmium	ug/L	ND	40	40	38.4	39.0	96	98	70-130	2	20	
Chromium	ug/L	1.9	40	40	39.9	40.5	95	96	70-130	1	20	
Cobalt	ug/L	ND	40	40	36.9	37.5	91	92	70-130	2	20	
Copper	ug/L	1.7	40	40	36.6	37.1	87	88	70-130	1	20	
Lead	ug/L	ND	40	40	41.3	41.9	102	104	70-130	2	20	
Manganese	ug/L	106	40	40	146	146	98	99	70-130	0	20	
Nickel	ug/L	4.8	40	40	39.8	40.0	87	88	70-130	1	20	
Selenium	ug/L	5.8	40	40	44.8	46.3	97	101	70-130	3	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60151681

MATRIX SPIKE SAMPLE:		1242341					
Parameter	Units	60151563003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	1.4	40	43.6	105	70-130	
Cadmium	ug/L	77.2	40	119	105	70-130	
Chromium	ug/L	0.25J	40	39.2	97	70-130	
Cobalt	ug/L	39.5	40	78.7	98	70-130	
Copper	ug/L	42.6	40	82.0	99	70-130	
Lead	ug/L	2.6	40	42.1	99	70-130	
Manganese	ug/L	50200	40	52100	4750	70-130	M1
Nickel	ug/L	44.7	40	83.7	97	70-130	
Selenium	ug/L	ND	40	43.2	108	70-130	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60151681

QC Batch: MPRP/23992 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60151681001, 60151681002, 60151681003

METHOD BLANK: 1242881 Matrix: Water
Associated Lab Samples: 60151681001, 60151681002, 60151681003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	09/04/13 18:37	
Cadmium, Dissolved	ug/L	ND	0.50	09/04/13 18:37	
Chromium, Dissolved	ug/L	0.12J	1.0	09/04/13 18:37	
Cobalt, Dissolved	ug/L	0.16J	1.0	09/04/13 18:37	
Copper, Dissolved	ug/L	0.19J	1.0	09/04/13 18:37	
Lead, Dissolved	ug/L	0.053J	1.0	09/04/13 18:37	
Manganese, Dissolved	ug/L	0.47J	1.0	09/04/13 18:37	
Nickel, Dissolved	ug/L	0.22J	1.0	09/04/13 18:37	
Selenium, Dissolved	ug/L	ND	1.0	09/04/13 18:37	

LABORATORY CONTROL SAMPLE: 1242882

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	38.7	97	85-115	
Cadmium, Dissolved	ug/L	40	40.4	101	85-115	
Chromium, Dissolved	ug/L	40	38.1	95	85-115	
Cobalt, Dissolved	ug/L	40	36.6	92	85-115	
Copper, Dissolved	ug/L	40	37.2	93	85-115	
Lead, Dissolved	ug/L	40	38.2	95	85-115	
Manganese, Dissolved	ug/L	40	40.4	101	85-115	
Nickel, Dissolved	ug/L	40	36.9	92	85-115	
Selenium, Dissolved	ug/L	40	40.9	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1242883 1242884

Parameter	Units	60151681002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	40.8	40	40	78.6	75.3	94	86	70-130	4	20	
Cadmium, Dissolved	ug/L	1490	40	40	1530	1560	92	172	70-130	2	20 M1	
Chromium, Dissolved	ug/L	207	40	40	245	244	96	94	70-130	0	20	
Cobalt, Dissolved	ug/L	215	40	40	250	250	89	89	70-130	0	20	
Copper, Dissolved	ug/L	21200	40	40	21000	21600	-438	975	70-130	3	20 M1	
Lead, Dissolved	ug/L	163	40	40	197	201	83	94	70-130	2	20	
Manganese, Dissolved	ug/L	98000	40	40	97500	99800	-1375	4250	70-130	2	20 M1	
Nickel, Dissolved	ug/L	362	40	40	394	407	80	113	70-130	3	20	
Selenium, Dissolved	ug/L	29.5	40	40	57.6	62.3	70	82	70-130	8	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60151681

QC Batch: WET/43051 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60151681001, 60151681002, 60151681003

METHOD BLANK: 1242166 Matrix: Water

Associated Lab Samples: 60151681001, 60151681002, 60151681003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	08/26/13 08:23	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	08/26/13 08:23	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	08/26/13 08:23	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	08/26/13 08:23	

LABORATORY CONTROL SAMPLE: 1242167

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	485	97	90-110	

SAMPLE DUPLICATE: 1242170

Parameter	Units	60151614002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	529	493	7	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	529	493	7	10	

SAMPLE DUPLICATE: 1242171

Parameter	Units	60151563003 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	118	116	1	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	118	116	1	10	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60151681

QC Batch: WETA/25971 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60151681002

METHOD BLANK: 1243368 Matrix: Water
Associated Lab Samples: 60151681002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	08/28/13 09:02	
Chloride	mg/L	ND	1.0	08/28/13 09:02	
Fluoride	mg/L	ND	0.20	08/28/13 09:02	
Sulfate	mg/L	ND	1.0	08/28/13 09:02	

LABORATORY CONTROL SAMPLE: 1243369

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.1	102	90-110	
Chloride	mg/L	5	4.9	99	90-110	
Fluoride	mg/L	2.5	2.5	100	90-110	
Sulfate	mg/L	5	4.7	95	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1243370 1243371

Parameter	Units	60151144001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	ND	250	250	253	254	101	102	80-120	0	15	
Chloride	mg/L	379	250	250	628	629	100	100	80-120	0	15	
Fluoride	mg/L	ND	125	125	128	128	103	103	80-120	0	15	
Sulfate	mg/L	405	250	250	673	674	107	107	80-120	0	15	

MATRIX SPIKE SAMPLE: 1243372

Parameter	Units	60151500005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	5	5.3	95	80-120	
Chloride	mg/L	31.7	25	57.6	103	80-120	
Fluoride	mg/L	0.77	2.5	3.4	107	80-120	
Sulfate	mg/L	11.5	5	17.8	127	80-120 M1	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60151681

QC Batch: WETA/25992

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60151681001, 60151681003

METHOD BLANK: 1244158

Matrix: Water

Associated Lab Samples: 60151681001, 60151681003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	08/29/13 08:57	
Chloride	mg/L	ND	1.0	08/29/13 08:57	
Sulfate	mg/L	ND	1.0	08/29/13 08:57	

METHOD BLANK: 1244968

Matrix: Water

Associated Lab Samples: 60151681001, 60151681003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	08/30/13 08:57	
Chloride	mg/L	ND	1.0	08/30/13 08:57	
Fluoride	mg/L	ND	0.20	08/30/13 08:57	
Sulfate	mg/L	ND	1.0	08/30/13 08:57	

LABORATORY CONTROL SAMPLE: 1244159

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.9	97	90-110	
Chloride	mg/L	5	4.8	97	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

LABORATORY CONTROL SAMPLE: 1244969

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.7	94	90-110	
Chloride	mg/L	5	4.7	94	90-110	
Fluoride	mg/L	2.5	2.4	94	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1244160

1244161

Parameter	Units	60151269009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	ND	1000	1000	968	974	97	97	80-120	1	15	
Chloride	mg/L	ND	1000	1000	971	966	97	97	80-120	1	15	
Fluoride	mg/L	ND	500	500	496	487	99	97	80-120	2	15	
Sulfate	mg/L	1670	1000	1000	2680	2680	101	102	80-120	0	15	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60151681

MATRIX SPIKE SAMPLE:		1244162					
Parameter	Units	60151269012 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	1000	971	97	80-120	
Chloride	mg/L	ND	1000	991	83	80-120	
Fluoride	mg/L	ND	500	494	99	80-120	
Sulfate	mg/L	2490	1000	3620	112	80-120	

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Rico-Argentine Mine Site

Pace Project No.: 60151681

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rico-Argentine Mine Site

Pace Project No.: 60151681

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60151681001	BLAINEOBF130821	EPA 200.7	MPRP/23990	EPA 200.7	ICP/18767
60151681002	BLAINEIBF130821	EPA 200.7	MPRP/23990	EPA 200.7	ICP/18767
60151681003	517SHAFT465130821	EPA 200.7	MPRP/23990	EPA 200.7	ICP/18767
60151681001	BLAINEOBF130821	EPA 200.7	MPRP/23991	EPA 200.7	ICP/18768
60151681002	BLAINEIBF130821	EPA 200.7	MPRP/23991	EPA 200.7	ICP/18768
60151681003	517SHAFT465130821	EPA 200.7	MPRP/23991	EPA 200.7	ICP/18768
60151681001	BLAINEOBF130821	EPA 200.8	MPRP/23972	EPA 200.8	ICPM/2471
60151681002	BLAINEIBF130821	EPA 200.8	MPRP/23972	EPA 200.8	ICPM/2471
60151681003	517SHAFT465130821	EPA 200.8	MPRP/23972	EPA 200.8	ICPM/2471
60151681001	BLAINEOBF130821	EPA 200.8	MPRP/23992	EPA 200.8	ICPM/2473
60151681002	BLAINEIBF130821	EPA 200.8	MPRP/23992	EPA 200.8	ICPM/2473
60151681003	517SHAFT465130821	EPA 200.8	MPRP/23992	EPA 200.8	ICPM/2473
60151681001	BLAINEOBF130821	EPA 245.1	MERP/7649	EPA 245.1	MERC/7603
60151681002	BLAINEIBF130821	EPA 245.1	MERP/7649	EPA 245.1	MERC/7603
60151681003	517SHAFT465130821	EPA 245.1	MERP/7649	EPA 245.1	MERC/7603
60151681001	BLAINEOBF130821	EPA 245.1	MERP/7648	EPA 245.1	MERC/7602
60151681002	BLAINEIBF130821	EPA 245.1	MERP/7648	EPA 245.1	MERC/7602
60151681003	517SHAFT465130821	EPA 245.1	MERP/7648	EPA 245.1	MERC/7602
60151681001	BLAINEOBF130821	SM 2320B	WET/43051		
60151681002	BLAINEIBF130821	SM 2320B	WET/43051		
60151681003	517SHAFT465130821	SM 2320B	WET/43051		
60151681001	BLAINEOBF130821	EPA 300.0	WETA/25992		
60151681002	BLAINEIBF130821	EPA 300.0	WETA/25971		
60151681003	517SHAFT465130821	EPA 300.0	WETA/25992		

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Sample Condition Upon Receipt
ESI Tech Spec Client

WO#: 60151681



60151681

Client Name: BP Amec

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 1Z733W872210054825 Pace Shipping Label Used? Yes ☒ No ☐

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☒ ZPEL

Thermometer Used: T-112 / T-194

Type of Ice: Wet Blue ☐ None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 2.3

Date and initials of person examining contents: 8-23-13 EA

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Filtered volume received for dissolved tests?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Includes date/time/ID/analyses	Matrix: <u>WT</u>	15.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	16.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	17.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		18.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	19.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	20. List State:

Client Notification/ Resolution:

Copy COC to Client? Y / N

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: MW for Amec

Date: 8/23/13

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.	
Start: <u>1415</u>	Start:
End: <u>1420</u>	End:
Temp:	Temp:



Chain of Custody Record

Page 1 of 1

Rush TAT: Yes ☒ No ☐

Lab Work Order Number:

BP/ARC LaMP COC Rev. 6 01/01/2009

September 05, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: Rico-Argentine Mine Site
Pace Project No.: 60151844

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on August 27, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Rico-Argentine Mine Site

Pace Project No.: 60151844

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

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SAMPLE SUMMARY

Project: Rico-Argentine Mine Site

Pace Project No.: 60151844

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60151844001	DR3A1308261105	Water	08/26/13 11:05	08/27/13 10:20

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SAMPLE ANALYTE COUNT

Project: Rico-Argentine Mine Site

Pace Project No.: 60151844

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60151844001	DR3A1308261105	EPA 200.7	JGP	9
		EPA 200.7	JGP	9
		EPA 200.8	SMW	9
		EPA 200.8	SMW	9
		EPA 245.1	TJT	1
		EPA 245.1	TJT	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60151844

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: BP AMEC

Date: September 05, 2013

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/24051

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60151844001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1245135)
- Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60151844

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: September 05, 2013

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/24048

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60151844001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1245126)
 - Calcium, Dissolved
- MSD (Lab ID: 1245127)
 - Calcium, Dissolved

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60151844

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: September 05, 2013

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/24052

B: Analyte was detected in the associated method blank.

- BLANK for HBN 304987 [MPRP/240 (Lab ID: 1245136)]
- Chromium

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/24052

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60151844001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1245139)
- Manganese

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60151844

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: September 05, 2013

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/24049

B: Analyte was detected in the associated method blank.

- BLANK for HBN 304984 [MPRP/240 (Lab ID: 1245128)]
- Lead, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/24049

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60151844001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1245131)
- Manganese, Dissolved

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60151844

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: September 05, 2013

General Information:

1 sample was analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60151844

Method: EPA 245.1
Description: 245.1 Mercury, Dissolved
Client: BP AMEC
Date: September 05, 2013

General Information:

1 sample was analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60151844

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: September 05, 2013

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60151844

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: September 05, 2013

General Information:

1 sample was analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60151844

Sample: DR3A1308261105 Lab ID: 60151844001 Collected: 08/26/13 11:05 Received: 08/27/13 10:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	777	ug/L	75.0	16.6	1	08/30/13 10:45	08/30/13 16:29	7429-90-5	M1
Calcium	239000	ug/L	100	10.4	1	08/30/13 10:45	08/30/13 16:29	7440-70-2	
Iron	6950	ug/L	50.0	11.6	1	08/30/13 10:45	08/30/13 16:29	7439-89-6	
Lithium	28.6	ug/L	10.0	2.4	1	08/30/13 10:45	08/30/13 16:29	7439-93-2	
Magnesium	18900	ug/L	50.0	6.5	1	08/30/13 10:45	08/30/13 16:29	7439-95-4	
Potassium	3410	ug/L	500	44.4	1	08/30/13 10:45	08/30/13 16:29	7440-09-7	
Silicon	7690	ug/L	500	23.9	1	08/30/13 10:45	08/30/13 16:29	7440-21-3	
Sodium	15500	ug/L	500	21.7	1	08/30/13 10:45	08/30/13 16:29	7440-23-5	
Zinc	3800	ug/L	50.0	3.3	1	08/30/13 10:45	08/30/13 16:29	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	107	ug/L	75.0	16.6	1	08/30/13 10:45	08/30/13 16:41	7429-90-5	M1
Calcium, Dissolved	237000	ug/L	100	10.4	1	08/30/13 10:45	08/30/13 16:41	7440-70-2	
Iron, Dissolved	813	ug/L	50.0	11.6	1	08/30/13 10:45	08/30/13 16:41	7439-89-6	
Lithium, Dissolved	22.8	ug/L	10.0	2.4	1	08/30/13 10:45	08/30/13 16:41	7439-93-2	
Magnesium, Dissolved	18600	ug/L	50.0	6.5	1	08/30/13 10:45	08/30/13 16:41	7439-95-4	
Potassium, Dissolved	3360	ug/L	500	44.4	1	08/30/13 10:45	08/30/13 16:41	7440-09-7	
Silicon, Dissolved	7100	ug/L	500	23.9	1	08/30/13 10:45	08/30/13 16:41	7440-21-3	
Sodium, Dissolved	15600	ug/L	500	21.7	1	08/30/13 10:45	08/30/13 16:41	7440-23-5	
Zinc, Dissolved	3380	ug/L	50.0	3.3	1	08/30/13 10:45	08/30/13 16:41	7440-66-6	D9
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.3	ug/L	1.0	0.050	1	08/30/13 10:45	09/04/13 17:52	7440-38-2	B
Cadmium	20.7	ug/L	0.50	0.050	1	08/30/13 10:45	09/04/13 17:52	7440-43-9	
Chromium	0.66J	ug/L	1.0	0.070	1	08/30/13 10:45	09/04/13 17:52	7440-47-3	
Cobalt	2.6	ug/L	1.0	0.080	1	08/30/13 10:45	09/04/13 17:52	7440-48-4	
Copper	143	ug/L	1.0	0.12	1	08/30/13 10:45	09/04/13 17:52	7440-50-8	
Lead	14.0	ug/L	1.0	0.030	1	08/30/13 10:45	09/04/13 17:52	7439-92-1	
Manganese	1840	ug/L	1.0	0.14	1	08/30/13 10:45	09/04/13 17:52	7439-96-5	
Nickel	4.0	ug/L	1.0	0.070	1	08/30/13 10:45	09/04/13 17:52	7440-02-0	
Selenium	0.16J	ug/L	1.0	0.14	1	08/30/13 10:45	09/04/13 17:52	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.087J	ug/L	1.0	0.050	1	08/30/13 10:45	09/04/13 18:08	7440-38-2	D9
Cadmium, Dissolved	19.2	ug/L	0.50	0.050	1	08/30/13 10:45	09/04/13 18:08	7440-43-9	
Chromium, Dissolved	0.19J	ug/L	1.0	0.070	1	08/30/13 10:45	09/04/13 18:08	7440-47-3	
Cobalt, Dissolved	3.0	ug/L	1.0	0.080	1	08/30/13 10:45	09/04/13 18:08	7440-48-4	
Copper, Dissolved	11.5	ug/L	1.0	0.12	1	08/30/13 10:45	09/04/13 18:08	7440-50-8	
Lead, Dissolved	0.050J	ug/L	1.0	0.030	1	08/30/13 10:45	09/04/13 18:08	7439-92-1	
Manganese, Dissolved	1820	ug/L	1.0	0.14	1	08/30/13 10:45	09/04/13 18:08	7439-96-5	
Nickel, Dissolved	4.0	ug/L	1.0	0.070	1	08/30/13 10:45	09/04/13 18:08	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	08/30/13 10:45	09/04/13 18:08	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	08/28/13 11:50	08/29/13 10:59	7439-97-6	

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60151844

Sample: DR3A1308261105		Lab ID: 60151844001		Collected: 08/26/13 11:05		Received: 08/27/13 10:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	08/28/13 11:50	08/29/13 11:24	7439-97-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Bicarbonate (CaCO ₃)	153	mg/L	20.0	4.9	1		08/28/13 09:16		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	4.9	1		08/28/13 09:16		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	4.9	1		08/28/13 09:16		
Alkalinity, Total as CaCO ₃	153	mg/L	20.0	4.9	1		08/28/13 09:16		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.090	1		08/30/13 10:56	24959-67-9	
Chloride	0.93J	mg/L	1.0	0.50	1		08/30/13 10:56	16887-00-6	
Fluoride	2.2	mg/L	0.20	0.047	1		08/30/13 10:56	16984-48-8	
Sulfate	662	mg/L	50.0	8.0	50		08/29/13 18:48	14808-79-8	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60151844

QC Batch: MERP/7649

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury

Associated Lab Samples: 60151844001

METHOD BLANK: 1243459

Matrix: Water

Associated Lab Samples: 60151844001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	08/29/13 10:44	

LABORATORY CONTROL SAMPLE: 1243460

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.7	93	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1243461

1243462

Parameter	Units	60151681003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.7	4.7	93	94	70-130	1	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60151844

QC Batch: MERP/7648

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury - Dissolved

Associated Lab Samples: 60151844001

METHOD BLANK: 1243454

Matrix: Water

Associated Lab Samples: 60151844001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	08/29/13 11:04	

LABORATORY CONTROL SAMPLE: 1243455

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	4.6	93	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1243456 1243457

Parameter	Units	60151681003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury, Dissolved	ug/L	ND	5	5	4.6	4.6	92	91	70-130	1	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60151844

QC Batch: MPRP/24051 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60151844001

METHOD BLANK: 1245132 Matrix: Water
Associated Lab Samples: 60151844001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	08/30/13 16:17	
Calcium	ug/L	ND	100	08/30/13 16:17	
Iron	ug/L	ND	50.0	08/30/13 16:17	
Lithium	ug/L	ND	10.0	08/30/13 16:17	
Magnesium	ug/L	ND	50.0	08/30/13 16:17	
Potassium	ug/L	ND	500	08/30/13 16:17	
Silicon	ug/L	ND	500	08/30/13 16:17	
Sodium	ug/L	ND	500	08/30/13 16:17	
Zinc	ug/L	ND	50.0	08/30/13 16:17	

LABORATORY CONTROL SAMPLE: 1245133

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	10200	102	85-115	
Calcium	ug/L	10000	9760	98	85-115	
Iron	ug/L	10000	9280	93	85-115	
Lithium	ug/L	1000	1060	106	85-115	
Magnesium	ug/L	10000	9570	96	85-115	
Potassium	ug/L	10000	10400	104	85-115	
Silicon	ug/L	5000	4580	92	85-115	
Sodium	ug/L	10000	10500	105	85-115	
Zinc	ug/L	1000	998	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1245134 1245135

Parameter	Units	60151844001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	777	10000	10000	10900	10600	101	98	70-130	3	8	
Calcium	ug/L	239000	10000	10000	247000	236000	79	-30	70-130	5	9 M1	
Iron	ug/L	6950	10000	10000	16200	15600	92	86	70-130	4	10	
Lithium	ug/L	28.6	1000	1000	1100	1070	107	104	70-130	3	20	
Magnesium	ug/L	18900	10000	10000	28900	27200	99	83	70-130	6	9	
Potassium	ug/L	3410	10000	10000	14000	13600	106	102	70-130	3	7	
Silicon	ug/L	7690	5000	5000	12200	11900	91	84	70-130	3	5	
Sodium	ug/L	15500	10000	10000	26000	25100	105	96	70-130	3	8	
Zinc	ug/L	3800	1000	1000	4810	4510	102	71	70-130	7	11	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60151844

QC Batch: MPRP/24048 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Dissolved
Associated Lab Samples: 60151844001

METHOD BLANK: 1245124 Matrix: Water
Associated Lab Samples: 60151844001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	08/30/13 16:20	
Calcium, Dissolved	ug/L	ND	100	08/30/13 16:20	
Iron, Dissolved	ug/L	ND	50.0	08/30/13 16:20	
Lithium, Dissolved	ug/L	ND	10.0	08/30/13 16:20	
Magnesium, Dissolved	ug/L	ND	50.0	08/30/13 16:20	
Potassium, Dissolved	ug/L	ND	500	08/30/13 16:20	
Silicon, Dissolved	ug/L	ND	500	08/30/13 16:20	
Sodium, Dissolved	ug/L	ND	500	08/30/13 16:20	
Zinc, Dissolved	ug/L	ND	50.0	08/30/13 16:20	

LABORATORY CONTROL SAMPLE: 1245125

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	10400	104	85-115	
Calcium, Dissolved	ug/L	10000	10000	100	85-115	
Iron, Dissolved	ug/L	10000	9540	95	85-115	
Lithium, Dissolved	ug/L	1000	1080	108	85-115	
Magnesium, Dissolved	ug/L	10000	9680	97	85-115	
Potassium, Dissolved	ug/L	10000	10600	106	85-115	
Silicon, Dissolved	ug/L	5000	4690	94	85-115	
Sodium, Dissolved	ug/L	10000	10700	107	85-115	
Zinc, Dissolved	ug/L	1000	1010	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1245126 1245127

Parameter	Units	60151844001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	107	10000	10000	10100	10300	100	102	70-130	2	8	
Calcium, Dissolved	ug/L	237000	10000	10000	230000	234000	-67	-27	70-130	2	9 M1	
Iron, Dissolved	ug/L	813	10000	10000	9770	10000	90	92	70-130	3	10	
Lithium, Dissolved	ug/L	22.8	1000	1000	1080	1110	106	109	70-130	3	20	
Magnesium, Dissolved	ug/L	18600	10000	10000	27100	27000	86	84	70-130	1	9	
Potassium, Dissolved	ug/L	3360	10000	10000	13600	13800	102	105	70-130	2	7	
Silicon, Dissolved	ug/L	7100	5000	5000	11000	11300	79	84	70-130	2	5	
Sodium, Dissolved	ug/L	15600	10000	10000	25000	25400	94	98	70-130	2	8	
Zinc, Dissolved	ug/L	3380	1000	1000	4240	4230	86	84	70-130	0	11	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60151844

QC Batch: MPRP/24052 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60151844001

METHOD BLANK: 1245136 Matrix: Water
Associated Lab Samples: 60151844001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	09/04/13 17:23	
Cadmium	ug/L	ND	0.50	09/04/13 17:23	
Chromium	ug/L	0.092J	1.0	09/04/13 17:23	
Cobalt	ug/L	0.16J	1.0	09/04/13 17:23	
Copper	ug/L	ND	1.0	09/04/13 17:23	
Lead	ug/L	ND	1.0	09/04/13 17:23	
Manganese	ug/L	0.41J	1.0	09/04/13 17:23	
Nickel	ug/L	0.18J	1.0	09/04/13 17:23	
Selenium	ug/L	ND	1.0	09/04/13 17:23	

LABORATORY CONTROL SAMPLE: 1245137

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	39.8	99	85-115	
Cadmium	ug/L	40	41.4	103	85-115	
Chromium	ug/L	40	39.3	98	85-115	
Cobalt	ug/L	40	37.6	94	85-115	
Copper	ug/L	40	38.4	96	85-115	
Lead	ug/L	40	38.2	95	85-115	
Manganese	ug/L	40	40.4	101	85-115	
Nickel	ug/L	40	38.0	95	85-115	
Selenium	ug/L	40	42.4	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1245138 1245139

Parameter	Units	60151844001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	1.3	40	40	40.9	42.6	99	103	70-130	4	20	
Cadmium	ug/L	20.7	40	40	58.1	60.3	94	99	70-130	4	20	
Chromium	ug/L	0.66J	40	40	37.8	39.1	93	96	70-130	3	20	
Cobalt	ug/L	2.6	40	40	38.2	39.2	89	92	70-130	3	20	
Copper	ug/L	143	40	40	177	181	84	96	70-130	2	20	
Lead	ug/L	14.0	40	40	53.4	55.1	98	103	70-130	3	20	
Manganese	ug/L	1840	40	40	1880	1940	120	252	70-130	3	20 M1	
Nickel	ug/L	4.0	40	40	38.9	39.5	87	89	70-130	2	20	
Selenium	ug/L	0.16J	40	40	42.0	44.1	105	110	70-130	5	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60151844

QC Batch: MPRP/24049 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60151844001

METHOD BLANK: 1245128 Matrix: Water
Associated Lab Samples: 60151844001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	09/04/13 17:18	
Cadmium, Dissolved	ug/L	ND	0.50	09/04/13 17:18	
Chromium, Dissolved	ug/L	ND	1.0	09/04/13 17:18	
Cobalt, Dissolved	ug/L	0.16J	1.0	09/04/13 17:18	
Copper, Dissolved	ug/L	0.13J	1.0	09/04/13 17:18	
Lead, Dissolved	ug/L	0.046J	1.0	09/04/13 17:18	
Manganese, Dissolved	ug/L	0.28J	1.0	09/04/13 17:18	
Nickel, Dissolved	ug/L	0.19J	1.0	09/04/13 17:18	
Selenium, Dissolved	ug/L	ND	1.0	09/04/13 17:18	

LABORATORY CONTROL SAMPLE: 1245129

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	39.5	99	85-115	
Cadmium, Dissolved	ug/L	40	40.9	102	85-115	
Chromium, Dissolved	ug/L	40	38.4	96	85-115	
Cobalt, Dissolved	ug/L	40	37.3	93	85-115	
Copper, Dissolved	ug/L	40	37.9	95	85-115	
Lead, Dissolved	ug/L	40	37.6	94	85-115	
Manganese, Dissolved	ug/L	40	40.1	100	85-115	
Nickel, Dissolved	ug/L	40	37.5	94	85-115	
Selenium, Dissolved	ug/L	40	43.2	108	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1245130 1245131

Parameter	Units	60151844001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	0.087J	40	40	40.3	40.6	100	101	70-130	1	20	
Cadmium, Dissolved	ug/L	19.2	40	40	56.9	57.4	94	95	70-130	1	20	
Chromium, Dissolved	ug/L	0.19J	40	40	38.2	37.9	95	94	70-130	1	20	
Cobalt, Dissolved	ug/L	3.0	40	40	39.3	39.0	91	90	70-130	1	20	
Copper, Dissolved	ug/L	11.5	40	40	47.5	46.0	90	86	70-130	3	20	
Lead, Dissolved	ug/L	0.050J	40	40	39.6	39.6	99	99	70-130	0	20	
Manganese, Dissolved	ug/L	1820	40	40	1850	1890	70	155	70-130	2	20 M1	
Nickel, Dissolved	ug/L	4.0	40	40	39.6	39.5	89	89	70-130	0	20	
Selenium, Dissolved	ug/L	ND	40	40	41.7	41.9	104	105	70-130	1	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60151844

QC Batch: WET/43090

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60151844001

METHOD BLANK: 1243275

Matrix: Water

Associated Lab Samples: 60151844001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	08/28/13 09:02	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	08/28/13 09:02	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	08/28/13 09:02	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	08/28/13 09:02	

LABORATORY CONTROL SAMPLE: 1243276

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	463	93	90-110	

SAMPLE DUPLICATE: 1243279

Parameter	Units	60151844001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	153	154	1	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	153	154	1	10	

SAMPLE DUPLICATE: 1243280

Parameter	Units	60151716003 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	341	345	1	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	341	345	1	10	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60151844

QC Batch: WETA/25992 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60151844001

METHOD BLANK: 1244158 Matrix: Water
Associated Lab Samples: 60151844001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.0	08/29/13 08:57	

METHOD BLANK: 1244968 Matrix: Water
Associated Lab Samples: 60151844001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	08/30/13 08:57	
Chloride	mg/L	ND	1.0	08/30/13 08:57	
Fluoride	mg/L	ND	0.20	08/30/13 08:57	

LABORATORY CONTROL SAMPLE: 1244159

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	5.1	102	90-110	

LABORATORY CONTROL SAMPLE: 1244969

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.7	94	90-110	
Chloride	mg/L	5	4.7	94	90-110	
Fluoride	mg/L	2.5	2.4	94	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1244160 1244161

Parameter	Units	60151269009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Bromide	mg/L	ND	1000	1000	968	974	97	97	80-120	1	15
Chloride	mg/L	ND	1000	1000	971	966	97	97	80-120	1	15
Fluoride	mg/L	ND	500	500	496	487	99	97	80-120	2	15
Sulfate	mg/L	1670	1000	1000	2680	2680	101	102	80-120	0	15

MATRIX SPIKE SAMPLE: 1244162

Parameter	Units	60151269012 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	1000	971	97	80-120	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60151844

MATRIX SPIKE SAMPLE:		1244162					
Parameter	Units	60151269012 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	ND	1000	991	83	80-120	
Fluoride	mg/L	ND	500	494	99	80-120	
Sulfate	mg/L	2490	1000	3620	112	80-120	

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QUALIFIERS

Project: Rico-Argentine Mine Site

Pace Project No.: 60151844

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rico-Argentine Mine Site

Pace Project No.: 60151844

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60151844001	DR3A1308261105	EPA 200.7	MPRP/24051	EPA 200.7	ICP/18804
60151844001	DR3A1308261105	EPA 200.7	MPRP/24048	EPA 200.7	ICP/18803
60151844001	DR3A1308261105	EPA 200.8	MPRP/24052	EPA 200.8	ICPM/2481
60151844001	DR3A1308261105	EPA 200.8	MPRP/24049	EPA 200.8	ICPM/2480
60151844001	DR3A1308261105	EPA 245.1	MERP/7649	EPA 245.1	MERC/7603
60151844001	DR3A1308261105	EPA 245.1	MERP/7648	EPA 245.1	MERC/7602
60151844001	DR3A1308261105	SM 2320B	WET/43090		
60151844001	DR3A1308261105	EPA 300.0	WETA/25992		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt
ESI Tech Spec Client

WO#: 60151844



60151844

Client Name: BP AMEC

Optional

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Proj Due Date:

Tracking #: 1Z 733 W87 22 1005 4781 Pace Shipping Label Used? Yes ☒ No ☐

Proj Name:

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☒ 2P1C

Thermometer Used: T-112 / T-194

Type of Ice: (We) Blue ☐ None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 3.9

Date and initials of person examining contents: 12/8/13

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12. <u>12/8/13</u>
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses Matrix: <u>WT</u>		13.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:

Client Notification/ Resolution:

Copy COC to Client? Y / (N)

Field Data Required? Y / N

Person Contacted: _____

Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: -dmw

Date: 8/27/13

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: <u>1124</u>	Start:
End: <u>1131/120</u>	End:
Temp:	Temp:



Laboratory Management Program LAMP Chain of Custody Record

Page 1 of 1

BP/ARC Project Name: Rico-Argentine Mine Site

Req Due Date (mm/dd/yy):

Rush TAT: Yes ☒ No ☐

BP/ARC Facility No:

Lab Work Order Number:

Lab Name: Pace Analytical Laboratories, Inc.				BP/ARC Facility Address: Rico-Argentine Mine				Consultant/Contractor: AMEC E&I, Inc.													
Lab Address: 9608 Loiret Blvd., Lenexa, KS 66219				City, State, ZIP Code: Rico, Colorado				Consultant/Contractor Project No: SA11161313.300H													
Lab PM: Heather Wilson				Lead Regulatory Agency: U.S. EPA Region 8				Address: 10670 White Rock Road, Suite 100, Rancho Cordova, CA													
Lab Phone: (913) 563-1407				California Global ID No.: NA				Consultant/Contractor PM: Marc Lombardi													
Lab Shipping Acct: UPS # 733W87				Enfos Proposal No: D009D-0057 WR 268175				Phone: 916-636-3200													
Lab Bottle Order No: NA				Accounting Mode: Provision <u>X</u> OOC-BU <u> </u> OOC-RM <u> </u>				Email Report/EDD To: lynda.lombardi@amec.com													
Other Info: 2013 517 Injection Treatability Study				Stage: 4-Execute Activity: Spend				Invoice To: BP/ARC <u>X</u> Contractor <u> </u>													
BP/ARC EBM: Anthony Brown				Matrix		No. Containers / Preservative				Requested Analyses				Report Type & QC Level							
EBM Phone: 714-228-6770														Standard <u>X</u>							
EBM Email: anthony.brown@bp.com														Full Data Package <u> </u>							
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Methanol	Tot Metals-see notes (E200.7/200.8/E245.1)	Dis Metals-see notes (E200.7/200.8/E245.1)	Alkalinity-Total HCO ₃ , CO ₃ , OH (SM2320B)	Bromide (E300.0)	Chloride (E300.0)	Fluoride (E300.0)	Sulfate (E300.0)	Comments	
	PR3A1308261105	8/26/13	11:05	X	X		3	1	0	2	0	0		X	X	X	X	X	X	X	Dissolved metals samples are field filtered.
<div>Metals are: Al, Ca, Fe, K, Li, Na, Mg, Si, Zn (E200.7); As, Cd, Co, Cr, Cu, Mn, Ni, Pb, Se (E200.8); and Hg (E245.1)</div>																					
RUSH 5-day TAT																					
Sampler's Name: Merete Capener				Relinquished By / Affiliation				Date		Time		Accepted By / Affiliation				Date		Time			
Sampler's Company: AECI				Marc Capener / AECI				8/26/13		11:05		PASE				8/27/13		1020			
Shipment Method: UPS				Ship Date: 8/26/13																	
Shipment Tracking No: 1Z733WB72210054781																					
Special Instructions:																					
THIS LINE - LAB USE ONLY: Custody Seals In Place: <u>Yes</u> / No				Temp Blank: <u>Yes</u> / No				Cooler Temp on Receipt: <u>3-9</u> °F/C				Trip Blank: Yes / <u>No</u>				MS/MSD Sample Submitted: Yes / <u>No</u>					

September 12, 2013

Lynda Lombardi
AMEC Environmental & Infrastructure, Inc.
10670 White Rock Road
Suite 100
Rancho Cordova, CA 95670

RE: Project: Rico-Argentine Mine Site
Pace Project No.: 60152326

Dear Lynda Lombardi:

Enclosed are the analytical results for sample(s) received by the laboratory on September 04, 2013. The results relate only to the within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 10.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Rico-Argentine Mine Site

Pace Project No.: 60152326

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 13-012-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-13-4

Utah Certification #: KS000212013-3

Illinois Certification #: 003097

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Rico-Argentine Mine Site

Pace Project No.: 60152326

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60152326001	DR3A1309031330	Water	09/03/13 13:30	09/04/13 10:00

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SAMPLE ANALYTE COUNT

Project: Rico-Argentine Mine Site

Pace Project No.: 60152326

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60152326001	DR3A1309031330	EPA 200.7	NDJ	9
		EPA 200.7	NDJ	9
		EPA 200.8	TJG	9
		EPA 200.8	TJG	9
		EPA 245.1	TDS	1
		EPA 245.1	TDS	1
		SM 2320B	JMC	4
		EPA 300.0	OL	4

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site
Pace Project No.: 60152326

Method: EPA 200.7
Description: 200.7 Metals, Total
Client: BP AMEC
Date: September 12, 2013

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/24174

B: Analyte was detected in the associated method blank.

- BLANK for HBN 306225 [MPRP/241 (Lab ID: 1249958)]
- Lithium

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/24174

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60152326001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1249961)
- Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60152326

Method: EPA 200.7

Description: 200.7 Metals, Dissolved

Client: BP AMEC

Date: September 12, 2013

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/24171

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60152326001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1249942)
- Calcium, Dissolved

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60152326

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: BP AMEC

Date: September 12, 2013

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/24172

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60152478001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1249951)

- Manganese

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60152326

Method: EPA 200.8

Description: 200.8 MET ICPMS, Dissolved

Client: BP AMEC

Date: September 12, 2013

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

QC Batch: MPRP/24173

B: Analyte was detected in the associated method blank.

- BLANK for HBN 306224 [MPRP/241 (Lab ID: 1249954)]
- Lead, Dissolved

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60152326

Method: EPA 245.1

Description: 245.1 Mercury

Client: BP AMEC

Date: September 12, 2013

General Information:

1 sample was analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60152326

Method: EPA 245.1

Description: 245.1 Mercury, Dissolved

Client: BP AMEC

Date: September 12, 2013

General Information:

1 sample was analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MERP/7672

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60152326001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1248212)
- Mercury, Dissolved

R1: RPD value was outside control limits.

- MSD (Lab ID: 1248213)
- Mercury, Dissolved

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60152326

Method: SM 2320B

Description: 2320B Alkalinity

Client: BP AMEC

Date: September 12, 2013

General Information:

1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Rico-Argentine Mine Site

Pace Project No.: 60152326

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: BP AMEC

Date: September 12, 2013

General Information:

1 sample was analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60152326

Sample: DR3A1309031330 Lab ID: 60152326001 Collected: 09/03/13 13:30 Received: 09/04/13 10:00 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum	703	ug/L	75.0	16.6	1	09/09/13 13:30	09/10/13 17:08	7429-90-5	
Calcium	231000	ug/L	100	10.4	1	09/09/13 13:30	09/11/13 10:03	7440-70-2	M1
Iron	6530	ug/L	50.0	11.6	1	09/09/13 13:30	09/10/13 17:08	7439-89-6	
Lithium	30.9	ug/L	10.0	2.4	1	09/09/13 13:30	09/10/13 17:08	7439-93-2	B
Magnesium	19900	ug/L	50.0	6.5	1	09/09/13 13:30	09/10/13 17:08	7439-95-4	
Potassium	3100	ug/L	500	44.4	1	09/09/13 13:30	09/10/13 17:08	7440-09-7	
Silicon	7800	ug/L	500	23.9	1	09/09/13 13:30	09/10/13 17:08	7440-21-3	
Sodium	13200	ug/L	500	21.7	1	09/09/13 13:30	09/10/13 17:08	7440-23-5	
Zinc	4060	ug/L	50.0	3.3	1	09/09/13 13:30	09/10/13 17:08	7440-66-6	
200.7 Metals, Dissolved Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Aluminum, Dissolved	102	ug/L	75.0	16.6	1	09/09/13 13:30	09/10/13 17:21	7429-90-5	
Calcium, Dissolved	233000	ug/L	100	10.4	1	09/09/13 13:30	09/11/13 09:55	7440-70-2	D9,M1
Iron, Dissolved	952	ug/L	50.0	11.6	1	09/09/13 13:30	09/10/13 17:21	7439-89-6	
Lithium, Dissolved	30.5	ug/L	10.0	2.4	1	09/09/13 13:30	09/10/13 17:21	7439-93-2	
Magnesium, Dissolved	20200	ug/L	50.0	6.5	1	09/09/13 13:30	09/10/13 17:21	7439-95-4	D9
Potassium, Dissolved	3180	ug/L	500	44.4	1	09/09/13 13:30	09/10/13 17:21	7440-09-7	D9
Silicon, Dissolved	7300	ug/L	500	23.9	1	09/09/13 13:30	09/10/13 17:21	7440-21-3	
Sodium, Dissolved	13200	ug/L	500	21.7	1	09/09/13 13:30	09/10/13 17:21	7440-23-5	
Zinc, Dissolved	3780	ug/L	50.0	3.3	1	09/09/13 13:30	09/10/13 17:21	7440-66-6	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	1.3	ug/L	1.0	0.050	1	09/09/13 13:30	09/10/13 11:35	7440-38-2	
Cadmium	21.6	ug/L	0.50	0.050	1	09/09/13 13:30	09/10/13 11:35	7440-43-9	
Chromium	0.46J	ug/L	1.0	0.070	1	09/09/13 13:30	09/10/13 11:35	7440-47-3	
Cobalt	2.6	ug/L	1.0	0.080	1	09/09/13 13:30	09/10/13 11:35	7440-48-4	
Copper	141	ug/L	1.0	0.12	1	09/09/13 13:30	09/10/13 11:35	7440-50-8	
Lead	13.0	ug/L	1.0	0.030	1	09/09/13 13:30	09/10/13 11:35	7439-92-1	
Manganese	1890	ug/L	1.0	0.14	1	09/09/13 13:30	09/10/13 11:35	7439-96-5	
Nickel	2.8	ug/L	1.0	0.070	1	09/09/13 13:30	09/10/13 11:35	7440-02-0	
Selenium	ND	ug/L	1.0	0.14	1	09/09/13 13:30	09/10/13 11:35	7782-49-2	
200.8 MET ICPMS, Dissolved Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.10J	ug/L	1.0	0.050	1	09/09/13 13:30	09/10/13 12:11	7440-38-2	
Cadmium, Dissolved	19.7	ug/L	0.50	0.050	1	09/09/13 13:30	09/10/13 12:11	7440-43-9	
Chromium, Dissolved	0.23J	ug/L	1.0	0.070	1	09/09/13 13:30	09/10/13 12:11	7440-47-3	
Cobalt, Dissolved	4.3	ug/L	1.0	0.080	1	09/09/13 13:30	09/10/13 12:11	7440-48-4	D9
Copper, Dissolved	12.4	ug/L	1.0	0.12	1	09/09/13 13:30	09/10/13 12:11	7440-50-8	
Lead, Dissolved	0.19J	ug/L	1.0	0.030	1	09/09/13 13:30	09/10/13 12:11	7439-92-1	B
Manganese, Dissolved	1860	ug/L	1.0	0.14	1	09/09/13 13:30	09/10/13 12:11	7439-96-5	
Nickel, Dissolved	2.8	ug/L	1.0	0.070	1	09/09/13 13:30	09/10/13 12:11	7440-02-0	
Selenium, Dissolved	ND	ug/L	1.0	0.14	1	09/09/13 13:30	09/10/13 12:11	7782-49-2	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.20	0.14	1	09/11/13 08:30	09/11/13 12:45	7439-97-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rico-Argentine Mine Site

Pace Project No.: 60152326

Sample: DR3A1309031330		Lab ID: 60152326001		Collected: 09/03/13 13:30		Received: 09/04/13 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
245.1 Mercury, Dissolved		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury, Dissolved	ND	ug/L	0.20	0.14	1	09/05/13 15:30	09/06/13 08:52	7439-97-6	M1,R1
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO ₃)	139	mg/L	20.0	4.9	1		09/05/13 08:55		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	20.0	4.9	1		09/05/13 08:55		
Alkalinity, Hydroxide (CaCO ₃)	ND	mg/L	20.0	4.9	1		09/05/13 08:55		
Alkalinity, Total as CaCO ₃	139	mg/L	20.0	4.9	1		09/05/13 08:55		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	0.090	1		09/05/13 23:07	24959-67-9	
Chloride	0.95J	mg/L	1.0	0.50	1		09/05/13 23:07	16887-00-6	B
Fluoride	2.4	mg/L	0.20	0.047	1		09/05/13 23:07	16984-48-8	
Sulfate	617	mg/L	50.0	8.0	50		09/05/13 18:48	14808-79-8	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60152326

QC Batch: MERP/7689 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60152326001

METHOD BLANK: 1250918 Matrix: Water
Associated Lab Samples: 60152326001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	09/11/13 12:40	

LABORATORY CONTROL SAMPLE: 1250919

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.2	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1250920 1250921

Parameter	Units	60152326001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.8	4.8	95	95	70-130	0	20	

MATRIX SPIKE SAMPLE: 1250927

Parameter	Units	60152333002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	ND	5	4.0	78	70-130	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60152326

QC Batch: MERP/7672

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury - Dissolved

Associated Lab Samples: 60152326001

METHOD BLANK: 1248210

Matrix: Water

Associated Lab Samples: 60152326001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	09/06/13 08:48	

LABORATORY CONTROL SAMPLE: 1248211

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	5.0	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1248212 1248213

Parameter	Units	60152326001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury, Dissolved	ug/L	ND	5	5	3.0	4.6	61	91	70-130	39	20	M1, R1

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60152326

QC Batch: MPRP/24174 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60152326001

METHOD BLANK: 1249958 Matrix: Water
Associated Lab Samples: 60152326001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	09/10/13 17:06	
Calcium	ug/L	ND	100	09/11/13 09:48	
Iron	ug/L	ND	50.0	09/10/13 17:06	
Lithium	ug/L	3.3J	10.0	09/10/13 17:06	
Magnesium	ug/L	ND	50.0	09/10/13 17:06	
Potassium	ug/L	ND	500	09/10/13 17:06	
Silicon	ug/L	ND	500	09/10/13 17:06	
Sodium	ug/L	ND	500	09/10/13 17:06	
Zinc	ug/L	ND	50.0	09/10/13 17:06	

LABORATORY CONTROL SAMPLE: 1249959

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	9940	99	85-115	
Calcium	ug/L	10000	9400	94	85-115	
Iron	ug/L	10000	9430	94	85-115	
Lithium	ug/L	1000	983	98	85-115	
Magnesium	ug/L	10000	10100	101	85-115	
Potassium	ug/L	10000	9760	98	85-115	
Silicon	ug/L	5000	4640	93	85-115	
Sodium	ug/L	10000	9430	94	85-115	
Zinc	ug/L	1000	1040	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1249960 1249961

Parameter	Units	60152326001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	703	10000	10000	10800	10800	101	101	70-130	0	8	
Calcium	ug/L	231000	10000	10000	240000	237000	85	55	70-130	1	9 M1	
Iron	ug/L	6530	10000	10000	15800	16000	93	95	70-130	1	10	
Lithium	ug/L	30.9	1000	1000	1050	1060	102	103	70-130	0	20	
Magnesium	ug/L	19900	10000	10000	29700	29800	98	99	70-130	1	9	
Potassium	ug/L	3100	10000	10000	13300	13400	102	103	70-130	0	7	
Silicon	ug/L	7800	5000	5000	12400	12600	93	96	70-130	1	5	
Sodium	ug/L	13200	10000	10000	22900	23000	97	98	70-130	1	8	
Zinc	ug/L	4060	1000	1000	5080	5090	102	103	70-130	0	11	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60152326

QC Batch:	MPRP/24171	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Dissolved
Associated Lab Samples:	60152326001		

METHOD BLANK: 1249940 Matrix: Water
Associated Lab Samples: 60152326001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	75.0	09/10/13 17:19	
Calcium, Dissolved	ug/L	ND	100	09/11/13 09:46	
Iron, Dissolved	ug/L	ND	50.0	09/10/13 17:19	
Lithium, Dissolved	ug/L	2.9J	10.0	09/10/13 17:19	
Magnesium, Dissolved	ug/L	8.0J	50.0	09/10/13 17:19	
Potassium, Dissolved	ug/L	ND	500	09/10/13 17:19	
Silicon, Dissolved	ug/L	ND	500	09/10/13 17:19	
Sodium, Dissolved	ug/L	ND	500	09/10/13 17:19	
Zinc, Dissolved	ug/L	ND	50.0	09/10/13 17:19	

LABORATORY CONTROL SAMPLE: 1249941

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	10000	9970	100	85-115	
Calcium, Dissolved	ug/L	10000	9340	93	85-115	
Iron, Dissolved	ug/L	10000	9480	95	85-115	
Lithium, Dissolved	ug/L	1000	986	99	85-115	
Magnesium, Dissolved	ug/L	10000	10100	101	85-115	
Potassium, Dissolved	ug/L	10000	9800	98	85-115	
Silicon, Dissolved	ug/L	5000	4640	93	85-115	
Sodium, Dissolved	ug/L	10000	9410	94	85-115	
Zinc, Dissolved	ug/L	1000	1040	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1249942 1249943

Parameter	Units	60152326001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	102	10000	10000	10200	10300	100	102	70-130	1	8	
Calcium, Dissolved	ug/L	233000	10000	10000	239000	241000	53	74	70-130	1	9 M1	
Iron, Dissolved	ug/L	952	10000	10000	10300	10400	93	94	70-130	1	10	
Lithium, Dissolved	ug/L	30.5	1000	1000	1050	1070	102	104	70-130	1	20	
Magnesium, Dissolved	ug/L	20200	10000	10000	29400	30000	92	98	70-130	2	9	
Potassium, Dissolved	ug/L	3180	10000	10000	13100	13300	99	101	70-130	2	7	
Silicon, Dissolved	ug/L	7300	5000	5000	11800	11900	90	92	70-130	1	5	
Sodium, Dissolved	ug/L	13200	10000	10000	22500	22700	93	95	70-130	1	8	
Zinc, Dissolved	ug/L	3780	1000	1000	4650	4690	87	91	70-130	1	11	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60152326

QC Batch: MPRP/24172 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60152326001

METHOD BLANK: 1249948 Matrix: Water
Associated Lab Samples: 60152326001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	0.074J	1.0	09/10/13 11:21	
Cadmium	ug/L	ND	0.50	09/10/13 11:21	
Chromium	ug/L	ND	1.0	09/10/13 11:21	
Cobalt	ug/L	ND	1.0	09/10/13 11:21	
Copper	ug/L	ND	1.0	09/10/13 11:21	
Lead	ug/L	0.15J	1.0	09/10/13 11:21	
Manganese	ug/L	ND	1.0	09/10/13 11:21	
Nickel	ug/L	0.092J	1.0	09/10/13 11:21	
Selenium	ug/L	ND	1.0	09/10/13 11:21	

LABORATORY CONTROL SAMPLE: 1249949

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	40.1	100	85-115	
Cadmium	ug/L	40	40.7	102	85-115	
Chromium	ug/L	40	40.8	102	85-115	
Cobalt	ug/L	40	39.7	99	85-115	
Copper	ug/L	40	40.3	101	85-115	
Lead	ug/L	40	40.2	100	85-115	
Manganese	ug/L	40	40.9	102	85-115	
Nickel	ug/L	40	40.6	101	85-115	
Selenium	ug/L	40	40.5	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1249950 1249951

Parameter	Units	60152478001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	0.0048 mg/L	40	40	46.2	45.6	103	102	70-130	1	20	
Cadmium	ug/L	ND	40	40	38.5	38.6	96	96	70-130	0	20	
Chromium	ug/L	ND	40	40	40.4	39.0	100	97	70-130	3	20	
Cobalt	ug/L	ND	40	40	38.4	38.1	95	95	70-130	1	20	
Copper	ug/L	0.0020 mg/L	40	40	39.2	38.9	93	92	70-130	1	20	
Lead	ug/L	0.0020 mg/L	40	40	43.7	43.7	104	104	70-130	0	20	
Manganese	ug/L	1.2 mg/L	40	40	1290	1270	108	58	70-130	2	20 M1	
Nickel	ug/L	ND	40	40	37.3	37.1	92	92	70-130	1	20	
Selenium	ug/L	ND	40	40	42.2	42.4	104	105	70-130	0	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60152326

QC Batch: MPRP/24173 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60152326001

METHOD BLANK: 1249954 Matrix: Water
Associated Lab Samples: 60152326001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	ND	1.0	09/10/13 11:28	
Cadmium, Dissolved	ug/L	ND	0.50	09/10/13 11:28	
Chromium, Dissolved	ug/L	ND	1.0	09/10/13 11:28	
Cobalt, Dissolved	ug/L	ND	1.0	09/10/13 11:28	
Copper, Dissolved	ug/L	0.14J	1.0	09/10/13 11:28	
Lead, Dissolved	ug/L	0.14J	1.0	09/10/13 11:28	
Manganese, Dissolved	ug/L	ND	1.0	09/10/13 11:28	
Nickel, Dissolved	ug/L	0.071J	1.0	09/10/13 11:28	
Selenium, Dissolved	ug/L	ND	1.0	09/10/13 11:28	

LABORATORY CONTROL SAMPLE: 1249955

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	40	39.5	99	85-115	
Cadmium, Dissolved	ug/L	40	40.0	100	85-115	
Chromium, Dissolved	ug/L	40	40.0	100	85-115	
Cobalt, Dissolved	ug/L	40	38.9	97	85-115	
Copper, Dissolved	ug/L	40	38.9	97	85-115	
Lead, Dissolved	ug/L	40	40.0	100	85-115	
Manganese, Dissolved	ug/L	40	40.9	102	85-115	
Nickel, Dissolved	ug/L	40	39.1	98	85-115	
Selenium, Dissolved	ug/L	40	41.2	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1249956 1249957

Parameter	Units	60152478001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	4.4	40	40	45.6	45.6	103	103	70-130	0	20	
Cadmium, Dissolved	ug/L	ND	40	40	38.8	38.8	97	97	70-130	0	20	
Chromium, Dissolved	ug/L	ND	40	40	39.7	40.2	97	99	70-130	1	20	
Cobalt, Dissolved	ug/L	ND	40	40	37.8	38.1	94	95	70-130	1	20	
Copper, Dissolved	ug/L	1.1	40	40	37.1	37.6	90	91	70-130	1	20	
Lead, Dissolved	ug/L	ND	40	40	42.3	42.6	104	105	70-130	1	20	
Manganese, Dissolved	ug/L	503	40	40	544	552	102	123	70-130	2	20	
Nickel, Dissolved	ug/L	ND	40	40	37.0	37.1	91	91	70-130	0	20	
Selenium, Dissolved	ug/L	ND	40	40	45.6	45.2	113	112	70-130	1	20	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60152326

QC Batch: WET/43224

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60152326001

METHOD BLANK: 1247400

Matrix: Water

Associated Lab Samples: 60152326001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	20.0	09/05/13 08:50	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	20.0	09/05/13 08:50	
Alkalinity, Total as CaCO ₃	mg/L	ND	20.0	09/05/13 08:50	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	20.0	09/05/13 08:50	

LABORATORY CONTROL SAMPLE: 1247401

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	500	461	92	90-110	

SAMPLE DUPLICATE: 1247404

Parameter	Units	60152028001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	144	147	2	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	144	147	2	10	

SAMPLE DUPLICATE: 1247405

Parameter	Units	60152028008 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Hydroxide (CaCO ₃)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO ₃	mg/L	179	180	0	10	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	179	180	0	10	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site
Pace Project No.: 60152326

QC Batch: WETA/26085 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60152326001

METHOD BLANK: 1247632 Matrix: Water
Associated Lab Samples: 60152326001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	09/05/13 08:57	
Chloride	mg/L	ND	1.0	09/05/13 08:57	
Sulfate	mg/L	ND	1.0	09/05/13 08:57	

METHOD BLANK: 1248637 Matrix: Water
Associated Lab Samples: 60152326001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.0	09/05/13 22:36	

METHOD BLANK: 1248712 Matrix: Water
Associated Lab Samples: 60152326001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	09/06/13 21:36	
Chloride	mg/L	0.72J	1.0	09/06/13 21:36	
Fluoride	mg/L	ND	0.20	09/06/13 21:36	
Sulfate	mg/L	ND	1.0	09/06/13 21:36	

LABORATORY CONTROL SAMPLE: 1247633

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.8	95	90-110	
Chloride	mg/L	5	4.8	95	90-110	
Sulfate	mg/L	5	5.2	104	90-110	

LABORATORY CONTROL SAMPLE: 1248638

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	5.1	102	90-110	

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QUALITY CONTROL DATA

Project: Rico-Argentine Mine Site

Pace Project No.: 60152326

LABORATORY CONTROL SAMPLE: 1248713

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.8	96	90-110	
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	2.5	2.5	99	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1247634 1247635

Parameter	Units	60152326001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	ND	5	5	4.9	4.9	99	98	80-120	1	15	
Chloride	mg/L	0.95J	5	5	5.1	5.2	84	84	80-120	0	15	
Fluoride	mg/L	2.4	2.5	2.5	4.9	4.9	99	100	80-120	1	15	
Sulfate	mg/L	617	250	250	900	890	113	109	80-120	1	15	

MATRIX SPIKE SAMPLE: 1247636

Parameter	Units	60152028005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	5	4.9	99	80-120	
Chloride	mg/L	1.4	5	5.6	84	80-120	
Fluoride	mg/L	0.24	2.5	2.7	97	80-120	
Sulfate	mg/L	46.0	25	71.2	101	80-120	

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QUALIFIERS

Project: Rico-Argentine Mine Site

Pace Project No.: 60152326

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

R1 RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rico-Argentine Mine Site

Pace Project No.: 60152326

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60152326001	DR3A1309031330	EPA 200.7	MPRP/24174	EPA 200.7	ICP/18876
60152326001	DR3A1309031330	EPA 200.7	MPRP/24171	EPA 200.7	ICP/18875
60152326001	DR3A1309031330	EPA 200.8	MPRP/24172	EPA 200.8	ICPM/2494
60152326001	DR3A1309031330	EPA 200.8	MPRP/24173	EPA 200.8	ICPM/2493
60152326001	DR3A1309031330	EPA 245.1	MERP/7689	EPA 245.1	MERC/7644
60152326001	DR3A1309031330	EPA 245.1	MERP/7672	EPA 245.1	MERC/7628
60152326001	DR3A1309031330	SM 2320B	WET/43224		
60152326001	DR3A1309031330	EPA 300.0	WETA/26085		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt
ESI Tech Spec Client

WO#: 60152326



Client Name: BP-Amec

Courier: Fed Ex ☐ UPS ☒ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 1Z 733 N07 221005 8223 Pace Shipping Label Used? Yes ☒ No ☐

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☒ Bubble Bags ☐ Foam ☐ None ☐ Other ☐

Thermometer Used: T-112 / T-194

Type of Ice: Wet Blue ☐ None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 5.3

Date and initials of person examining contents: 9/4/13 1100

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses	Matrix: <u>water</u>	13.
All containers needing preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed <u>MA</u> Lot # of added preservative
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank lot # (if purchased):	<u>MA</u>	15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
		16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:

Client Notification/ Resolution:

Copy COC to Client? Y ☒ N

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [Signature]

Date: 9/4/13

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: <u>1255</u>	Start:
End: <u>1100</u>	End:
Temp:	Temp:



Chain of Custody Record

Page 1 of 1

Req Due Date (mm/dd/yy):

Rush TAT: Yes ☒ No ☐

Lab Work Order Number:

Lab Name: Pace Analytical Laboratories, Inc.				BP/ARC Facility Address: Rico-Argentine Mine				Consultant/Contractor: AMEC E&I, Inc.													
Lab Address: 9608 Loiret Blvd., Lenexa, KS 66219				City, State, ZIP Code: Rico, Colorado				Consultant/Contractor Project No: SA11161313.300H													
Lab PM: Heather Wilson				Lead Regulatory Agency: U.S. EPA Region 8				Address: 10670 White Rock Road, Suite 100, Rancho Cordova, CA													
Lab Phone: (913) 563-1407				California Global ID No.: NA				Consultant/Contractor PM: Marc Lombardi													
Lab Shipping Acct: UPS # 733W87				Enfos Proposal No: D009D-0057 WR 268175				Phone: 916-636-3200													
Lab Bottle Order No: NA				Accounting Mode: Provision <u>X</u> OOC-BU <u> </u> OOC-RM <u> </u>				Email Report/EDD To: lynda.lombardi@amec.com													
Other Info: 2013 517 Injection Treatability Study				Stage: 4-Execute Activity: Spend				Invoice To: BP/ARC <u>X</u> Contractor <u> </u>													
BP/ARC EBM: Anthony Brown				Matrix		No. Containers / Preservative				Requested Analyses				Report Type & QC Level							
EBM Phone: 714-228-6770														Standard <u>X</u>							
EBM Email: anthony.brown@bp.com														Full Data Package <u> </u>							
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Methanol	Tot Metals-see notes (E200.7/200.8/E245.1)	Dis Metals-see notes (E200.7/200.8/E245.1)	Alkalinity-Total HCO ₃ , CO ₃ , OH (SM2320B)	Bromide (E300.0)	Chloride (E300.0)	Fluoride (E300.0)	Sulfate (E300.0)	Comments	
	DR3A1309031330	09/03/13	13:30	X			3	1	0	2	0	0		X	X	X	X	X	X	X	60152326 Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.
																				Dissolved metals samples are field filtered.	
																				(1BP2u) (1BP3u) (1BP3u)	
																				Metals are: Al, Ca, Fe, K, Li, Na, Mg, Si,	
																				Zn (E200.7); As, Cd, Co, Cr, Cu, Mn, Ni,	
																				Pb, Se (E200.8); and Hg (E245.1)	
																				RUSH 5-day TAT	
Sampler's Name: Merete Capener				Relinquished By / Affiliation				Date		Time		Accepted By / Affiliation				Date		Time			
Sampler's Company: AECI				M. Capener				9/3/13		13:30		[Signature] / P. [Signature]				9/4/13		1000			
Shipment Method: UPS				Ship Date: 9/3/13																	
Shipment Tracking No: 1Z733W0J2210054701				B223																	
Special Instructions: RUSH				MC 9/3/13																	
THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes/No				Temp Blank: Yes/No				Cooler Temp on Receipt: 5.3 °C				Trip Blank: Yes/No				MS/MSD Sample Submitted: Yes/No					